MUTOH
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MUTOH ROCKHOPPER II

Maintenance Manual

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This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with this manual, may cause harmful interference to radio communications. Operation of this product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his expense.

1. Radio interfere

   Product generates weak radio signals and may interfere with television reception and utilities. If a product does interfere with radio or TV reception, try following:

   - Change the direction of your radio and TV reception antenna or feeder.
   - Change the direction of the product.
   - Move either the product or the receiving antenna so there is more distance between them.
   - Be sure the product and the receiving antenna are on separate power lines.

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1. SAFETY INSTRUCTIONS

1.1. INTRODUCTION

This chapter explains the meaning of safety terms for personnel who operate this equipment, important safety instructions and the positions of the warning labels.

Important :

- **Be sure to follow all instructions and warnings in this manual when using the equipment.**

1.2. WARNINGS, CAUTIONS AND NOTE

Safety terms in this manual and the contents of warning labels attached to the printer are categorized into the following three types depending on the degree of risk (or the scale of accident).
Read the following explanations carefully, and follow the instructions in this manual.

Safety terms	Details
Important	Must be followed carefully to avoid death or serious bodily injury.
Caution	Must be observed to avoid bodily injury (moderately or lightly) or damage to your equipment.
Note	Contains important information and useful tips on the operation of your printer.

1.3. IMPORTANT SAFETY INSTRUCTIONS

General safety instructions that must be observed to use the equipment safely are explained below.

1.3.1. Warning

- Do not place the printer in following areas. Doing so may result in the printer falling over and causing injury.
  - Angled place.
  - Areas subject to vibration by other equipment.
  - Do not stand on the printer or place heavy objects on the printer.
- Do not sit on the printer. Doing so may cause the printer to fall and injure people.
- Do not cover the ventilation hole of the printer with cloth, such as a blanket or table cloth. Doing so could obstruct ventilation and cause fire.
- Do not place the printer in humid and dusty areas. Doing so may result in electrical shock or fire.
- Be sure that the following is performed before replacing parts.
  - Turn the printer off.
  - Disconnect the power cable from the electric outlet. Not doing so may cause electric shock or damage to the electric circuit.
  - Unplug the cables connected to the printer.

1.3.2. Caution

- Assembling and disassembling the printer are possible only for the parts shown in the operation manual. Do not disassemble any frame parts or parts of which disassembling procedures are not shown in the manual. Doing so may cause trouble that cannot be restored, as the printer is originally assembled in the factory with a high accuracy of 1/100 mm.
- Do not touch the elements on the circuit board with bare hands. Doing so may cause static electricity and break the elements.
- Do not press down the transparent film on the sides of the damper assembly with your hands. The damper assembly is filled with ink and pressing on the film will make the ink spurt out.
- Be careful not to scratch the transparent film on the sides of the damper assembly.
- Be careful not to touch the surface of the print head's nozzles or to let dirt adhere to them.
- There is some remaining ink in the tubes. Be careful that the ink is not spilled from the tube onto the printer or objects close to the printer.
- If you need to operate the printer with the cover removed for maintenance, be careful not to get hurt by the moving parts.
- Do not oil the printer mechanism with oil other than the oil designated by MUTOH. Doing so may damage the parts or shorten the lifetime.
- If the power substrate assembly needs to be removed, disconnect the power cable and wait for at least 5 minutes before taking it out. This will discharge the residual electrical charge of the electrolytic capacitor. Touching the substrate before the capacitor discharges may cause electric shock.
- When connecting or disconnecting the FFC type cable from the connector of the main substrate assembly, be sure to connect or disconnect the cable straight out from the connector. Connecting or disconnecting at a slant angle may damage, break or short-circuit the inner terminal of the connector. That may damage the elements on the substrate.
- When connecting or disconnecting the FFC type cable from the connector of the CR substrate, be sure to connect or disconnect the cable straight out from the connector. Connecting or disconnecting at a slant angle may damage, break or short-circuit the inner terminal of the connector. That may damage the elements on the substrate.
- Before replacing parts, be sure to adjust the capping position. When the capping position adjustment has not been implemented, the cleaning position and other operational positions can exit the alignment and normal operations become impossible.
- Pay attention to the following points when performing the cutter endurance operation.
  - Install an available ink cartridge.
  - Make sure that media initialization has been completed.
- Make sure that the power of the printer is OFF before performing the parameter backup. Performing the parameter backup with the power ON may damage the main substrate or data may not be properly installed.
- Make sure that the power of the printer is OFF before installing the firmware. Installing the firmware with the power ON may damage the main substrate assembly or data may not be properly installed.
- Ensure there is sufficient space around the printer when performing maintenance work.
- Maintenance must be done by more than one person for :
  - detaching the printer from the stand or attaching it.
  - packing the printer for transportation.
- Be sure to directly clean when spoiling RH Cleaning Liquid. Because this liquid could damage the paint.

1.4. WARNING LABELS

The handling, attachment locations, and types of warning labels are explained below.
Warning labels are attached to areas to which attention should be paid. Read and understand the positions and contents thoroughly.

1.4.1. Handling the operation procedure labels

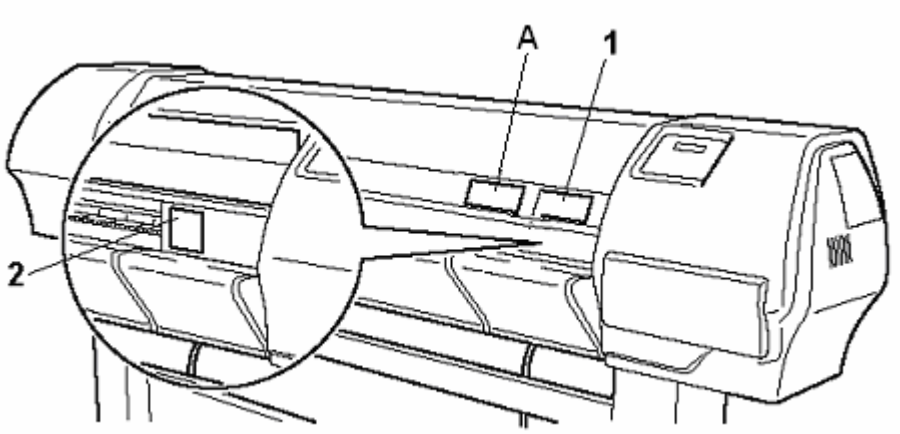
Notes :

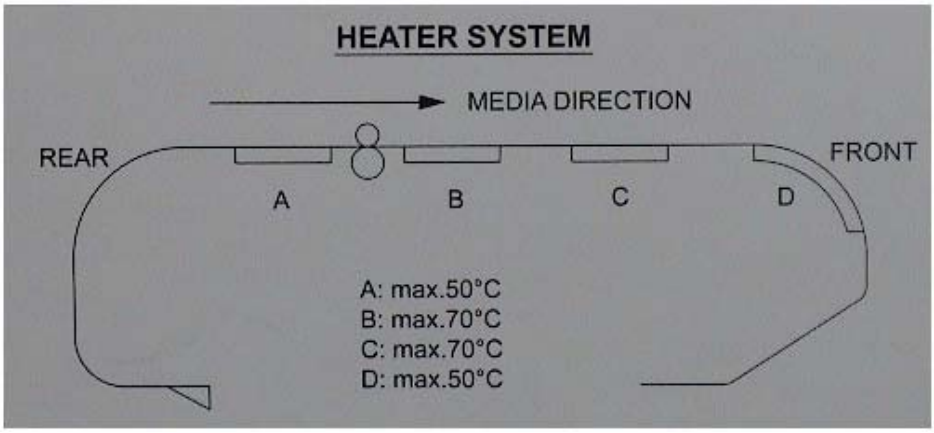
- Make sure that all labels can be recognized. If text or illustrations are invisible, clean or replace the label.
- When cleaning labels, use a cloth with water or neutral detergent. Do not use a solvent or gasoline.
- If a warning label has been damaged, lost or cannot be recognized, replace the label.

1.4.2. Locations and types of operation procedure labels

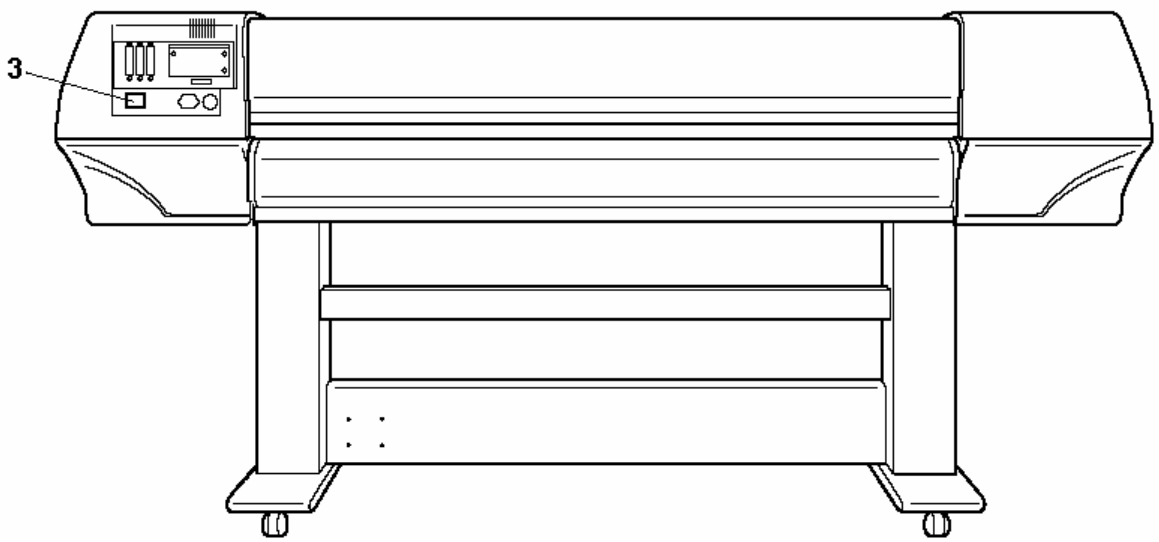
The locations of warning labels are shown below.

(1) Front Part



No.	Type
1	**CAUTION VORSICHT ATTENTION** > Do not open the front cover or touch the media during printing.This will result in poor image quality. > If no printing is to be done for some time, remove the media and put the hold lever in the up position. Otherwise the media may lift up and become wrinkled and you will not be able to obtain good printing results. > Öffnen Sie wärhend des Druckens die Frontabdeckung nicht und berühren Sie das Druckmaterial nicht. > Wenn Sie wärhend längere Zeit den Drucker nicht benutzen, nehmen Sie das Druckmaterial heraus und stellen Sie den Halthebel in die obersten Position. Sonst kann sich das Druckmaterial aufheben und zerknittern und demzufolge erzielen Sie keine gute Druckergebnisse mehr. > N'ouvrez pas le couvercle quand l'imprimante est en train d'imprimer. Ne touchez pas non plus le papier afin d'éviter que la qualité s'aggrave. > Si vous ne comptez pas imprimer pendant un certain temps, retirez le papier et mettez le levier en position levée. Sinon, le support risque de se soulever et de se froisser et vous n'obtiendrez pas de bonne qualité d'impression.
2	Only on a Rockhopper II 2H printer **CAUTION VORSICHT ATTENTION** > To avoid injury, keep fingers away from the cutter blade. > Um Verletzungen zu vermeiden, berühren Sie das Schneidemesser nicht. > Ne touchez pas la lame afin d'éviter des blessures. > To avoid injury, do not touch the edge of the steel belt. > Um Verletzungen zu vermeiden, berühren Sie den Stahl-Antriebsriemen nicht . > Ne touchez pas la courroie de transmission en acier afin d'éviter des blessures.
A	Only on a Rockhopper II 4H printer 

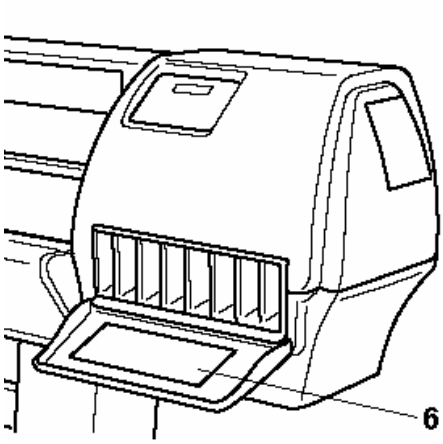
(2) Back Part

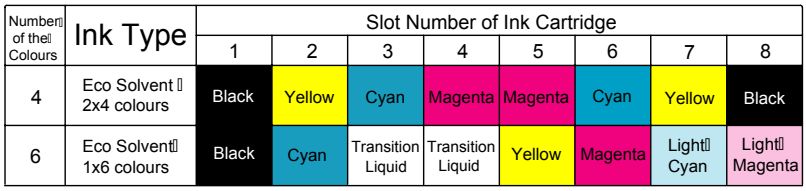
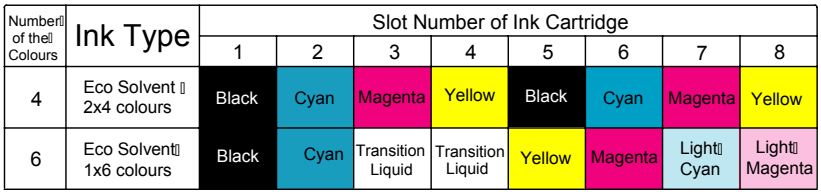


No.	Type
3	**CAUTION** THIS UNIT HAS TWO POWER SUPPLY CORDS STANDARD. TO REDUCE THE RISK OF ELECTRICAL SHOCK, DISCONNECT ALL POWER SUPPLY CORDS BEFORE SERVICING.

1.5. OPERATION PROCEDURE LABELS

The handling, attachment locations and types of operation procedure labels are explained below.
Your printer has labels, which give simple explanations of operations that require particular care. Read and understand the locations and contents of these labels thoroughly before performing your work.



No.	Type	Refer to
6		→ Refer to the User's Guide "Installing ink cartridges" Please note that ink cassettes order is different for 87" printers versus 50" and 64" printers. (Label 50" and 64" printer)
6		→ Refer to the User's Guide "Installing ink cartridges" Please note that ink cassettes order is different for 87" printers versus 50" and 64" printers. (Label 87" printer)

Number of the Colours
Ink Type
Slot Number of Ink Cartridge
1 2 3 4 5 6 7 8
4
Eco Solvent 2x4 colours
Black Yellow Cyan Magenta Magenta Cyan Yellow Black
6
Eco Solvent 1x6 colours
Black Cyan Transition Liquid Transition Liquid Yellow Magenta Light Cyan Light Magenta

Number of the Colours
Ink Type
Slot Number of Ink Cartridge
1 2 3 4 5 6 7 8
4
Eco Solvent 2x4 colours
Black Cyan Magenta Yellow Black Cyan Magenta Yellow
6
Eco Solvent 1x6 colours
Black Cyan Transition Liquid Transition Liquid Yellow Magenta Light Cyan Light Magenta

2. PRODUCT OVERVIEW

2.1. INTRODUCTION

This chapter explains the features, part names, and functions of the printer.

2.2. FEATURES

The features of the printer are explained below.

(1) High speed output

Both models feature new print heads and achieve high speed printing.
They also offer printing widths up to 1263 mm in 50-inch, 1643 mm in 64-inch and 2230 mm in 87-inch spec possible.

(2) Wide variety of compatible media

Adjustable head height can adapt to various media thickness from 0.08 up to 1.1 mm.

(3) Vibrant Colour Reproduction

To reproduce sharp and vivid colour, 4, 6 and 8 ink colours are used for printing. The 220ml large capacity ink tank is equipped with an IC chip. This unit can automatically detect the ink quantity, significantly improving productivity.

(4) Effective usage of media

A JOG feature is provided to allow setting of the printing position as required. Because printing can be performed on media on which was already printed, excess space can be used effectively.

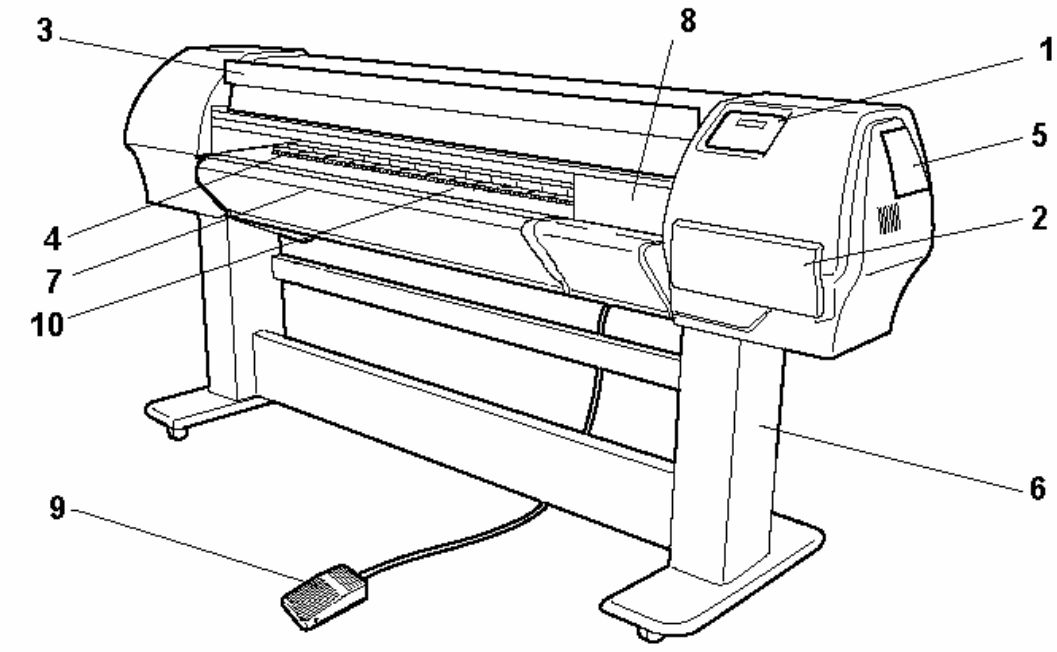
(5) RIP

Software Starter Pack included in-the-box. (To be defined with the order.)

2.3. PART NAMES AND FUNCTIONS

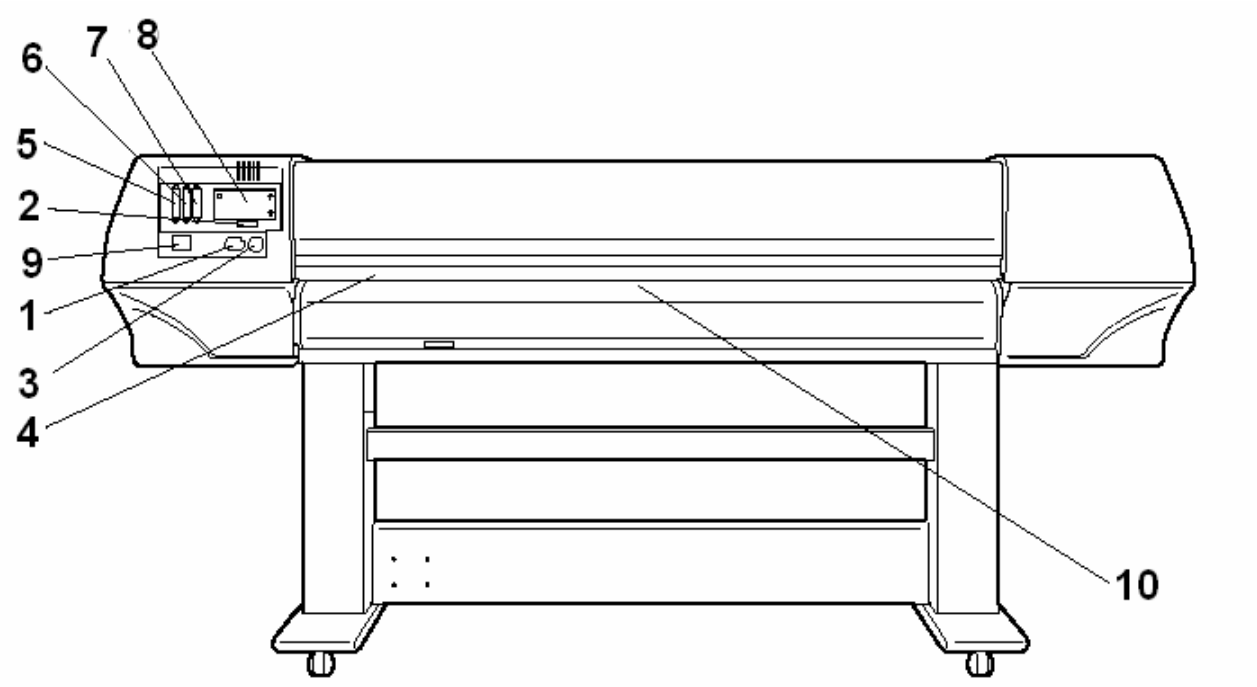
Part names and functions are explained below.

2.3.1. Front



No.	Name	Function
1	Operation panel	This panel is used to set operational conditions, the status of the printer, and other functions.
2	Ink compartment	This is the place for installing ink cartridges.
3	Front cover	This cover keeps the operator safe from the drive parts of the printer while it is operating. Only open and/or close the cover to perform following operations: ➢ Media setting and replacement ➢ Cutter blade replacement ➢ Cleaning the cleaning wiper ➢ In case of media jam.
4	Pressure rollers	This roller is used to press the media from above and keep it flat when printing.
5	Maintenance cover	This protects users from electric shocks caused by touching the internal electrical parts. The cover is opened when expansion memory (optional) has to be installed, and is closed for normal use.
6	Stand	This stand is used to install the printer on a surface flat floor. The following options are available for installation. ➢ Take-up system + scroller receiver ➢ Motorized roll-off / roll-up system
7	Media cut groove	Only onto the Rockhopper II 4H printer ! Used to cut the media straight when it is cut manually.
8	Carriage cover	Only onto the Rockhopper II printer ! This is a cover to protect the user from the internal components of the unit. This is opened during following operation : ➢ When cleaning the cleaning wiper
9	Foot switch	This switch is used to raise and lower the pressure rollers.
10	Paper Guide	Support the media during printing In the Rockhopper II it houses post-heater (dryer). In the Rockhopper II 4H it houses the fixer, post-fixer and dryer.

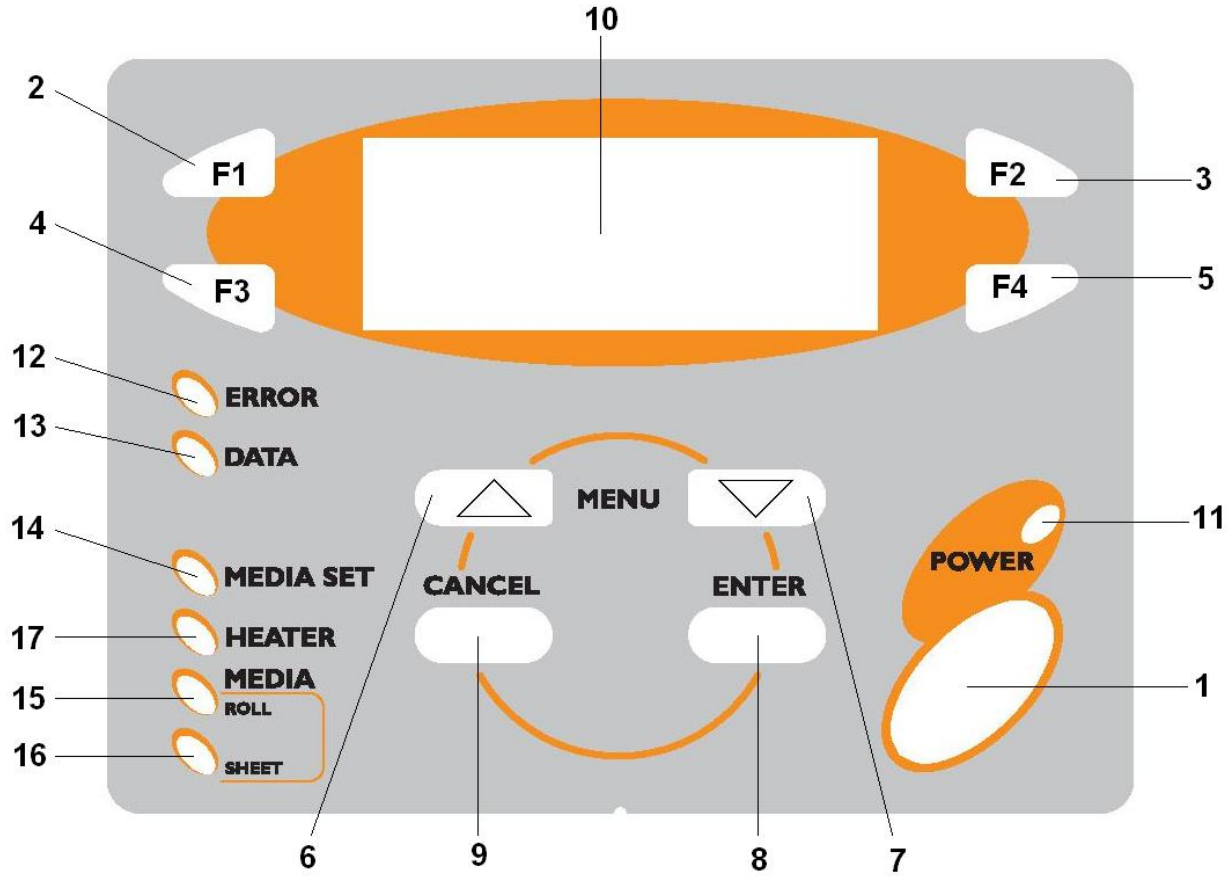
2.3.2. Back



No.	Name	Function
1	AC inlet	This is the inlet interface to which the power plug is connected.
2	Interface connector	This is the connector to which the interface cable is connected.
3	Foot switch connector	This is the connector to which the foot switch cable is attached.
4	Insertion slot	This is the slot for inserting media when loading it.
5	Interface slot 1	The network interface board attaches here.
6	Interface slot 2	This is not used for this printer. Close it with the cover.
7	Interface slot 3	
8	Hard disk slot	The hard disk attaches here. When not using a hard disk, keep the cover closed.
9	Nameplate rating	The type, name, serial number, rating and other details of the printer are labelled here.
10	Rear Heater	Supports the media during printing and houses the pre-heaters.

2.3.3. Operation panel

The operation panel is used to set operation conditions, display the status of the printer and set other functions.
The names and functions of the operation keys and status lamps are explained below.



(1) Operation Keys.

No.	Name	Normal	Setup menu display
1	[POWER] key	Turns the printer on and off.	Turns the printer on and off.
2	[F1] key	Executes the function assigned to F1.	Executes the function assigned to F1.
3	[F2] key	Executes the function assigned to F2.	Executes the function assigned to F2.
4	[F3] key	Executes the function assigned to F3.	Executes the function assigned to F3.
5	[F4] key	Executes the function assigned to F4.	Executes the function assigned to F4.
6	[MENU ↑] key	Changes the LCD monitor display to setup menu status.	Changes the menu in reverse order.
7	[MENU ↓] key	Changes the LCD monitor display to setup menu status.	Changes the menu in forward order.
8	[ENTER] key	Displays the print mode currently set.	Determines the new parameter value and changes the LCD monitor display to the next menu. Sets the parameter value and changes the LCD monitor display to the next menu.
9	[CANCEL] key	-	Cancels the new parameter value and changes the LCD monitor display to the next menu. Clears the parameter value and changes the LCD monitor display to the next menu.

(2) LCD monitor and status lamps.

No.	Name	Colour	Status	Function
10	LCD monitor	-	-	The monitor displays the operation status and error messages of the printer.
11	POWER lamp	Green	ON	The printer is on.
			OFF	The printer is off.
12	ERROR lamp	Red	Flashing	An error has occurred. The contents will be displayed on the LCD monitor.
			OFF	Either there is no error or the power is off.
13	DATA lamp	Orange	ON	The printer is receiving print data.
			Flashing	The printer is analysing receiving data.
			OFF	The printer is waiting to receive print data.
14	MEDIA SET lamp	Orange	ON	➢ The pressure rollers are in the release position. ➢ Media is not set.
			OFF	➢ The pressure rollers are in secured position. ➢ The media is set.
15	ROLL lamp	Orange	ON	The media type is set to roll media.
			OFF	The media type is set to sheet media.
16	SHEET lamp	Orange	ON	The media type is set to sheet media.
			OFF	The media type is set to roll media.
17	HEATER lamp	Orange	ON	The temperature of the heating elements is the requested temperature. The real temperature is the same as the requested temperature.
			Flashing	The heating elements are warming up. The real temperature is different as the requested temperature.
			OFF	The heating elements are powered OFF.

2.4. PRINTER STATUS

The status of the printer is explained below.

2.4.1. Normal

Indicates that the printer can print when media is loaded.
You can also make settings using the operation panel.

Notes :

- Refer to the User's Guide.

2.4.2. Setup menu display

Indicates that you can make settings using the operation panel.
Operations for printing can be conducted with the operation panel.

Notes :

- Refer to the User's Guide.

2.4.3. Self-diagnosis Function Display

Indicates that you can make settings concerning adjusting the printer using the operation panel. Keys of the operation panel have the same names and functions as the display status of the setup menu.

Notes :

- Refer to the chapter "Self-Diagnosis function".

2.4.4. Maintenance Mode Display

Indicates that you can make settings concerning the life of the printer. Keys of the operation panel have the same names and functions as the display status of the setup menu.

Notes :

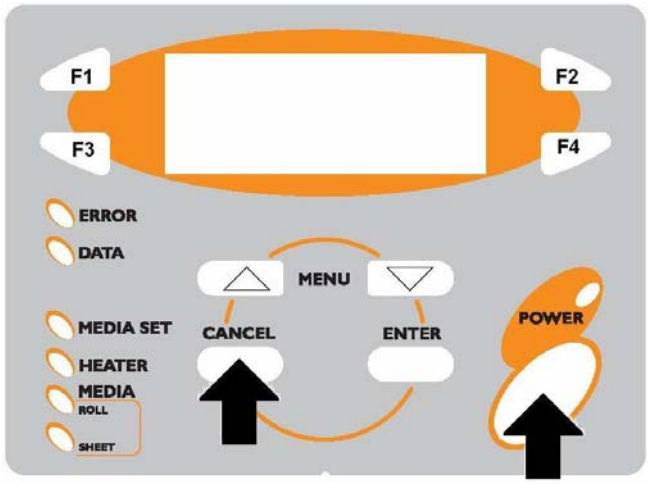
- Refer to the chapter "Maintenance mode".

2.4.5. Selecting Language

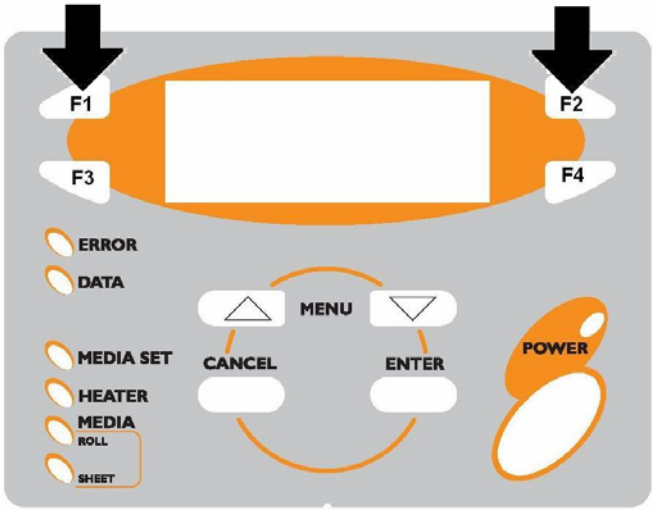
This chapter explains how to select the language on the display.
Japanese or English is selectable for the display language of the printer.

Follow the steps below to select the display language.

Step 1 : Press the [POWER] key while pressing the [CANCEL] key on the operation panel.



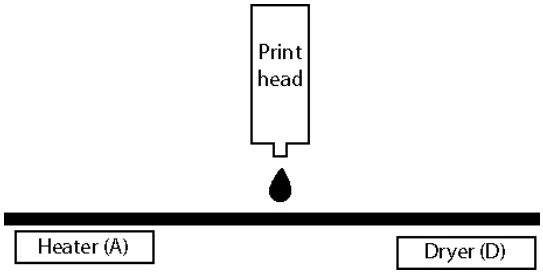
Step 2 : Press the [F1] key or [F2] key on the operation panel to change the parameter.



Step 3 : Press the [POWER] key, and then press the [POWER] key again.

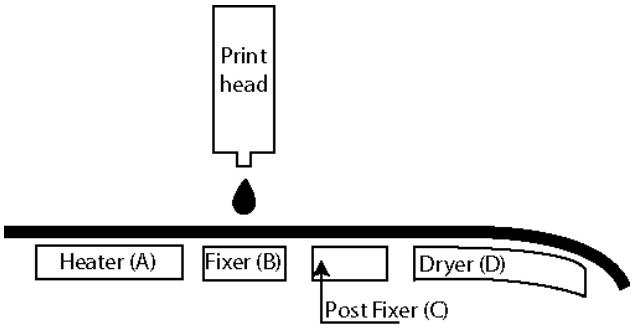
2.5. POSITION AND FUNCTION OF THE HEATING ELEMENTS

2.5.1. Rockhopper II 2 heater printers



Heater element	Temperature	Function
Pre-heater (Heater A)	20 – 50°C	→ Open the pores to make the media more receptive for eco-solvent or eco-solvent plus™ ink.
Dryer (Heater D)	20 – 50°C	→ Applying heating immediately after printing improves ink/media anchorage. → The dryer helps to make the media touch-dry before it reaches the automatic take-up system.

2.5.2. Rockhopper II 4 heater printers



Heater element	Temperature	Function
Pre-heater (Heater A)	20 – 50°C	→ Open the pores to make the media more receptive for eco-solvent or eco-solvent plus™ ink.
Fixer (Heater B)	20 – 70°C	→ To establish optimum fixation onto the media (coated and uncoated). → Optimizes the dot gain control.
Post-Fixer (Heater C)	20 – 70°C	→ The post-fixer finalizes the fixation process and helps to make the prints touch-dry.
Dryer (Heater D)	20 – 50°C	→ The dryer completes the drying for compatibility with the take-up in combination with higher output speeds. → Stickiness of printed banner materials is improved.

2.5.3. 2 or 4 heater

To verify if your printer is equipped with 2 or 4 heaters, please refer to the photo's mentioned below.

Rockhopper II 2 heater printer

Rockhopper II 4 heater printer

3. SPECIFICATIONS

3.1. INTRODUCTION

This section explains the specifications, optional parts and supplies, installation procedures for optional parts, and user support for this printer.

3.2. PRODUCT SPECIFICATIONS

Printers		**50”- model**	**64”- model**	**87”- model**
Technology		Drop-on-demand Micro Piezo Inkjet Technology. Variable drop mass output between 5.4 ng and 41.5 ng		
Media Thickness Compensation		Automatic media thickness compensation. Variable – RIP controlled – Head Height		
Maximum Media Widths		1273 mm	1653 mm	2240 mm
Maximum Print Widths		1263 mm	1643 mm	2230 mm
Media	Thickness Diameter / Core Weight	Range: 0.08 mm – 1.1 mm Maximum: 150 mm / 2” & 3” for 50,64 and 3” for 87 Maximum: 50 kg		
Colour Channels		8 colour channels – 4 or 6 process colour output		
Inks		Eco-Solvent Plus 2xCMYK speed set-up Eco-Solvent Plus CMYKLcLm photo tone rendering set-up		
Ink Cassette Capacity / Type		220 ml / smart chip ink type & order sensing		
Print Modes & Panel Control Options		Uni & Bi-directional output, Interweaving, Mirror Output, Multi Copy, Ink Status, Origin Control		

Speed Overview Table (*) 914mm (36”) wide output	50 & 64		87	
Ink Set-Up	2 x 4 Colours	6 Colours	2 x 4 Colours	6 Colours
360 x 360 ○○○ ○	5.7 – 37.7	2.9 – 19.6	5.7 – 37.7	3.9 – 27.7
720 x 360 ○	5.8 – 22.8	2.9 – 11.5	5.9 – 23.1	5.3 – 20.6
720 x 720 ○○○ ○	2.9 – 11.4	1.4 – 5.6	2.9 – 11.5	2.6 – 10.2
1440 x 720 ○	2.9 – 5.9	1.4 – 2.8	3.0 – 6.0	2.6 – 5.2
1440 x 1440 ○	1.4 – 2.9	0.7 – 1.5	1.5 – 3.0	1.3 – 2.6

Output speeds are given for 914 mm (36”) output.
50” output is 7 % faster, 64” output is 12 % faster and 87” output is 18 % faster.
For each mode, the minimum (Super High Quality) and maximum speed (Super Draft) are given.
Mode dependent, there are between 2 and 6 speed levels per mode, accessible via print direction selection and interweave control from the RIP software.
Top speeds indicated are super draft modes and do not guarantee production output quality on all media types.
○○○ Variable Drop Compatible ○ Fixed Drop Compatible

LCD Display	Backlight LED – 4 lines x 20 characters
Take-up System (standard)	Automated
Roll Media Core	2” & 3” for 50 & 64 and 3”” for 87
Interface	Centronics, IEEE 1284 compatible / Network, High Speed Interface (standard high-speed interface card – 4 Mb/s).
Graphics Command Language	RTL-PASS, MH-GL, MH-GL/2

Printers	50”- model	64”- model	87”- model
Power Consumption	1100 VA 80 VA in stand-by mode	1300 VA 80 VA in stand-by mode	1400 VA 100 VA in stand-by mode
External Dimensions in mm (W x D x H) Weight	2700 x 750 x 1250 170 kg	3100 x 750 x 1250 195 kg	3700 x 750 x 1250 215 kg
Noise Level	Operating: 54 dB or less		
Standard	VCCI (Class A), FCC (Class A), UL, CE, CCIB		
Standard Items	Hard Disk: 20.3 GB – Stores 16 jobs – Up to 99 copies/job – PostScript RIP included		
Optional Item	Extra Scroller Bars – Take-up System – Roll-off / roll-up system		

Area	50” model	11.7 m² or larger. Frontage of 4.3 m or greater.
	64” model	12.7 m² or larger. Frontage of 4.7 m or greater.
	87” model	14.3 m² or larger. Frontage of 5.3 m or greater.
Floor loading capability		2490Pa (300kg/m²) or over
Electrical	Voltage	AC100V - 120V or AC220V – 240V
	Frequency	50/60Hz±1Hz
	Capacity	AC100V - 120V: 3A or more AC220V - 240V: 1.5A or more
Environmental	Recommended working environment	Temperature: 25°C Humidity: 40% to 60%, without condensation
	Operational conditions	Temperature: 18°C to 35°C Humidity: 40% to 60%, without condensation
	Rate of change	Temperature: No more than 2°C per hour Humidity: No more than 5% per hour
	Storage environment	Temperature: -20°C to 60°C Humidity: 5% to 85%, without condensation (When ink has been discharged.)

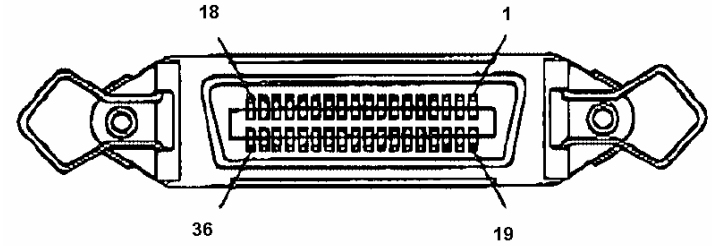
Specifications are liable to changes without prior notice. All trademarks mentioned are property of their respective owners.

3.3. INTERFACE SPECIFICATIONS

This section explains the specifications for the interfaces supported by this product.

3.3.1. Centronics Bidirection Parallel Interface:IEEE1284)

(1) Interface Specifications

Item	Specifications
Transmission modes	Compatible , Nibble , ECP Mode
Data length	8 bits
Transmission direction	Unidirectional (receiving only), Bidirectional
Connector pin number	

(2) Table of parallel interface pin numbers and signals

Pin number	Connection signal	Signal direction	Pin number	Connection signal	Signal direction
1	STROBE	To printer ←	19	SG	
2	DATA1	To and from printer ← →	20	SG	
3	DATA2	To and from printer ← →	21	SG	
4	DATA3	To and from printer ← →	22	SG	
5	DATA4	To and from printer ← →	23	SG	
6	DATA5	To and from printer ← →	24	SG	
7	DATA6	To and from printer ← →	25	SG	
8	DATA7	To and from printer ← →	26	SG	
9	DATA8	To and from printer ← →	27	SG	
10	ACK	From printer →	28	SG	
11	BUSY	From printer →	29	SG	
12	P ERROR	From printer →	30	SG	
13	SELECTED	From printer →	31	INIT	To printer ←
14	AUTOFD	To printer ←	32	FAULT	From printer →
15	Not connected		33	Not connected	
16	SG		34	Not connected	
17	FG		35	Not connected	
18	+5V		36	SELECTIN	To printer ←

(3) Recommended Centronics cable specifications

Item	Specifications
Interface	Dual-direction Parallel Interface:IEEE1284
Structure	AWG28×18 (twisted pair wiring)
Shield construction	Metallic tape + weaving (double shielded cable)
Characteristic impedance	62 Ω

3.3.2. Network Interface (Optional) Specifications

Item	Specifications
Network Type	Ethernet IEEE802.3
Network I/F	10 Base-T,100 Base-TX (RJ-45 connector, twisted pair cable) * Automatic switching
Protocol	TCP/IP
Mode	• ftp • lpr • socket
Functions	• Automatic protocol recognition • Transmission speed up to 4 MB/s • Network environment setting by Web.

3.4. INSTALLATION

The Installation of the unit is explained below.

3.4.1. Conditions of the installation environment

Important :

Do not place the printer in following areas. Doing so may result in the printer falling over and causing injury.
Unstable surfaces
Slanted place
Where vibration of other machines is transmitted.

Do not sit on the printer or put heavy things on the printer. Doing so may cause the printer to fall and injure people.

Do not cover the ventilation hole of the printer with cloth, such as a blanket or table cloth. Doing so could obstruct ventilation and cause fire.

Do not place the printer in humid and dusty areas. Doing so may result in electrical shock or fire.

(1) Conditions of the installation environment

Select the place to install this unit according to the environmental condition in the table below.

Area	50” model	11.7 m² or larger. Frontage of 4.3 m or greater.
	64” model	12.7 m² or larger. Frontage of 4.7 m or greater.
	87” model	14.3 m² or larger. Frontage of 5.3 m or greater.
Floor loading capability		2490Pa (300kg/m²) or over
Electrical	Voltage	AC100V - 120V or AC220V – 240V
	Frequency	50/60Hz±1Hz
	Capacity	AC100V - 120V: 3A or more AC220V - 240V: 1.5A or more
Environmental	Recommended working environment	Temperature: 25°C Humidity: 40% to 60%, without condensation
	Operational conditions	Temperature: 18°C to 35°C Humidity: 40% to 60%, without condensation
	Rate of change	Temperature: No more than 2°C per hour Humidity: No more than 5% per hour
	Storage environment	Temperature: -20°C to 60°C Humidity: 5% to 85%, without condensation (When ink has been discharged.)

Notes :

Avoid the following places with regard to temperature or humidity. If doing so, it may affect the printing result.
Places where the temperature of humidity may rapidly change even though it is within the correct range.
Places where there is direct sunlight or strong light.
Places where there is direct air from the air conditioner.

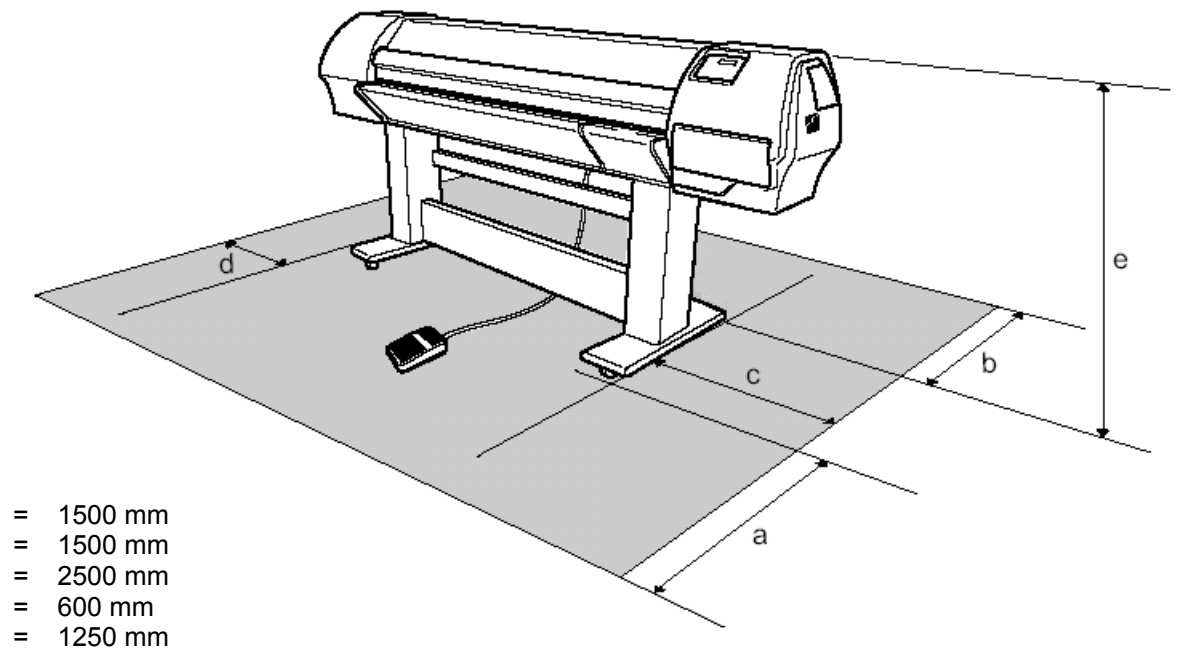
It is recommended to install the printer in an environment where the air conditioning is adjustable for temperature and humidity.

(2) Installation space

Install on a horizontal place that satisfies following conditions.
The floor has the sufficient strength to sustain the weight of the printer and the stand.

Notes :

Refer to 'product specifications'.



a = 1500 mm
b = 1500 mm
c = 2500 mm
d = 600 mm
e = 1250 mm

4. PARTS REPLACEMENT

4.1. INTRODUCTION

This chapter explains the procedures for replacing and removing maintenance parts.

Important :

- **Before replacing parts, be sure to perform following operations.**
  - **Turn the power OFF.**
  - **Remove the electrical cable from the socket. Otherwise, you may suffer electric shock or the machine's electric circuits may be damaged.**
  - **Disconnect all cables from the machine. Not doing so could cause damage to the printer.**

Caution :

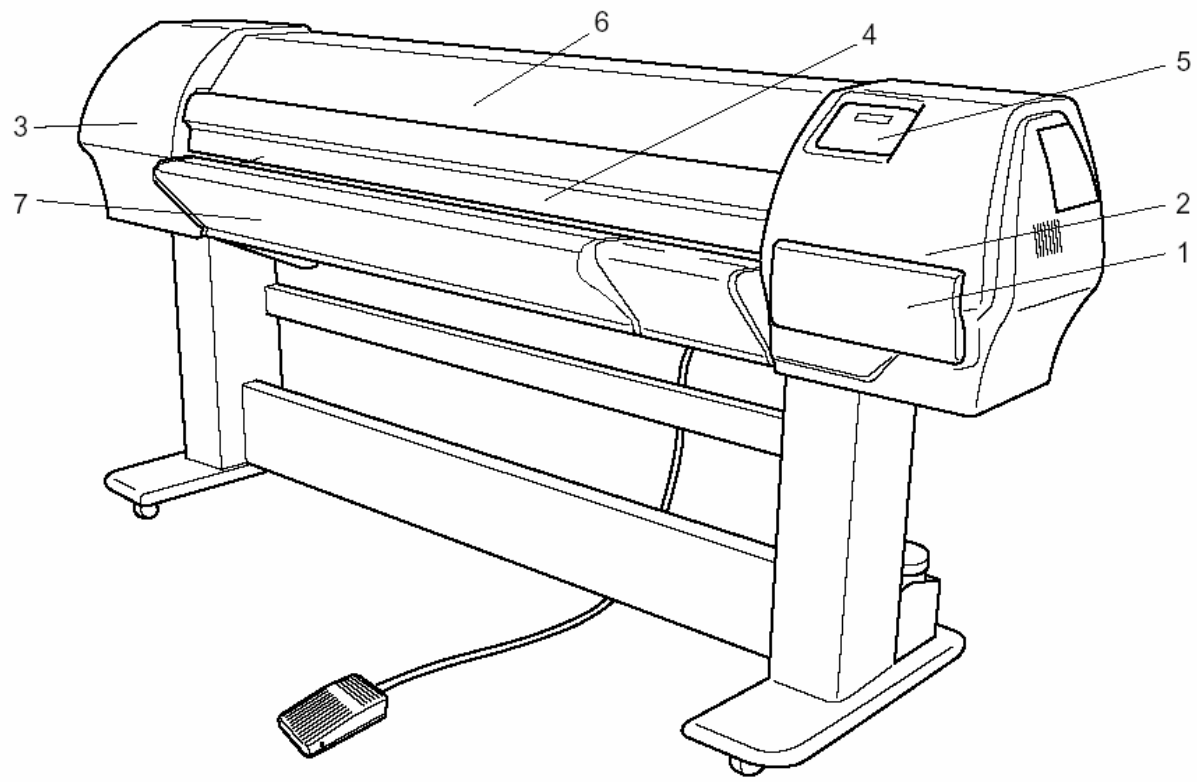
- Assembling and disassembling the printer is only allowed for the parts for which disassembling procedures are shown in the operation manual.
- Do not disassemble any frame parts or parts for which disassembling procedures are not shown in the manual.
- Doing so may cause trouble that cannot be restored, as the printer is originally assembled in the factory with a high accuracy of 1/100 mm.

Notes :

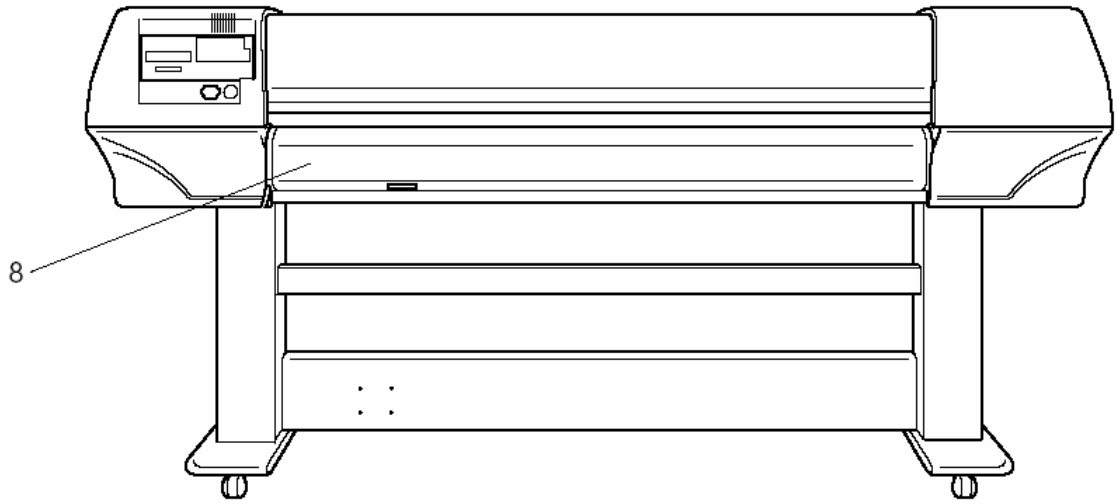
- After replacing the parts, perform necessary lubrication/bonding according to "Lubrication/Bonding".

4.2. REMOVING THE COVER

When replacing any of the parts inside the printer, it is necessary to remove all covers.
The procedures for removing the covers are given below.



1 = I/H cover	5 = Panel unit assembly
2 = Side cover R	6 = Y-rail cover
3 = side Cover L	7 = Front paper guide
4 = Front cover	



8 = Rear paper guide

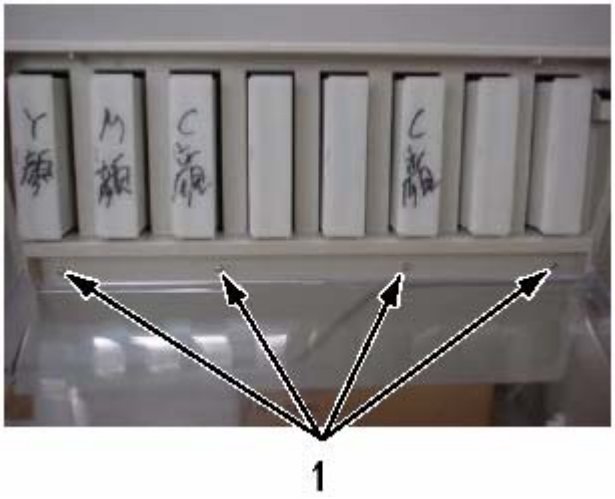
4.2.1. Removing the I/H cover

Step 1 : Remove the ink cartridge.

Step 2 : Open the I/H cover lid.

Step 3 : Remove the 4 screws fixing the I/H cover.

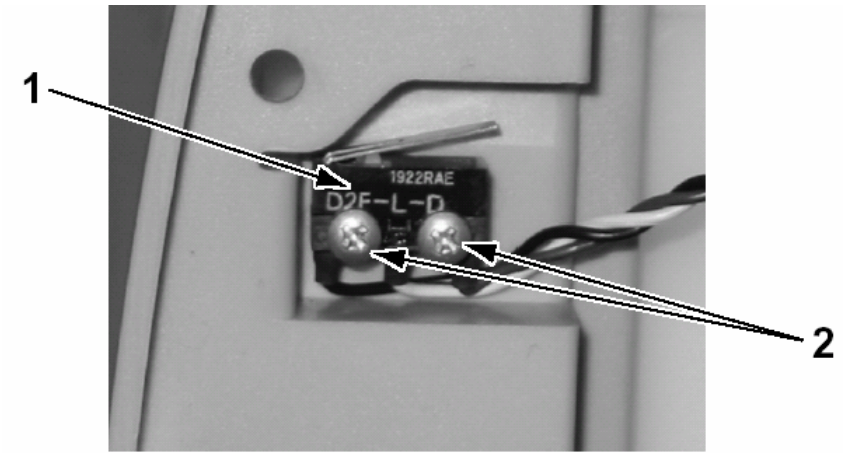
Step 4 : Remove the I/H cover and I/H cover lid.



1 = Screws (M3x12) fixing the I/H cover

Step 5 : Remove the 2 screws fixing the ink cover sensor.

Step 6 : Remove the ink cover sensor.



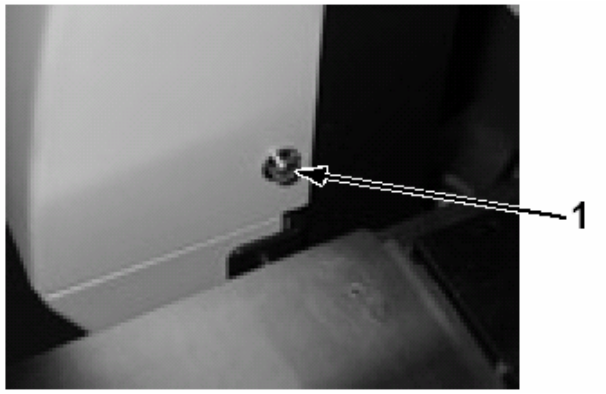
1 = Ink cover sensor	2 = Screws (M2x10) fixing the ink cover sensor

Step 7 : Replace the parts inside the printer.

Step 8 : Reinstall all parts in the opposite order of the removal procedure.

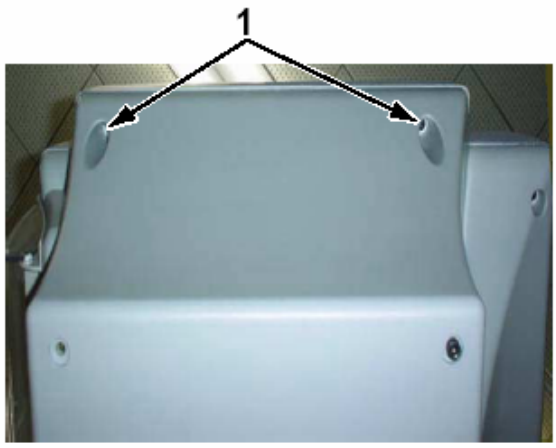
4.2.2. Removing side cover R

Step 1 : Remove the screw from the upper part of the side cover R.



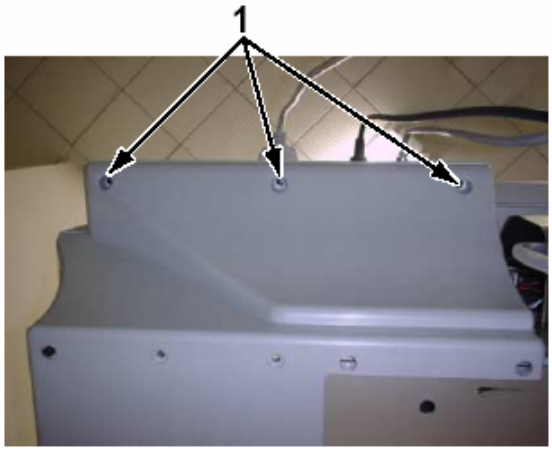
1 = Screws (M4x12) on the upper part of the side cover R

Step 2 : Remove the 2 screws from the bottom of side cover R.



1 = Screws (M4x16) on the side of the bottom of side cover R

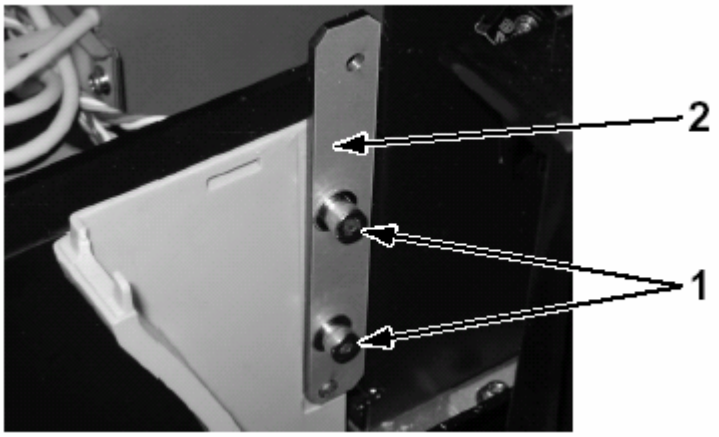
Step 3 : Remove the 3 screws from the back of the bottom of side cover R.



1 = Screws (M4x16) on the back of the bottom of side cover R

Step 4 : Remove the top of the side cover R.

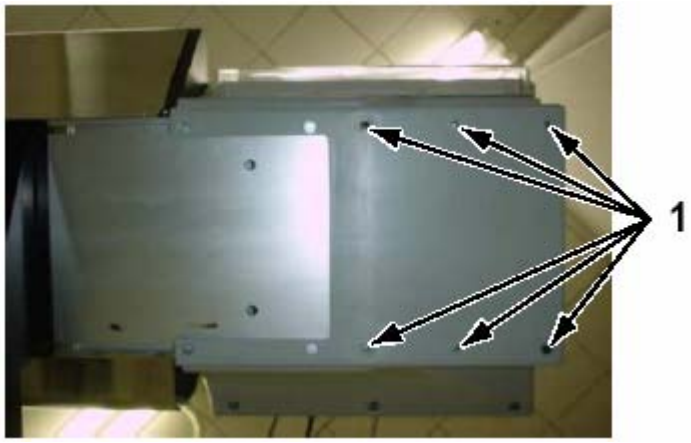
Step 5 : Remove the 4 bolts from the front and back of the inner surface on the bottom of side cover R and the front cover nut.



1 = Hexagon socket head cap screws (M4x16)	2 = Cover nut

Step 6 : Remove the 6 bolts from the front and back of the bottom surface on the bottom of the side cover R.

Step 7 : Remove the bottom of side cover R.



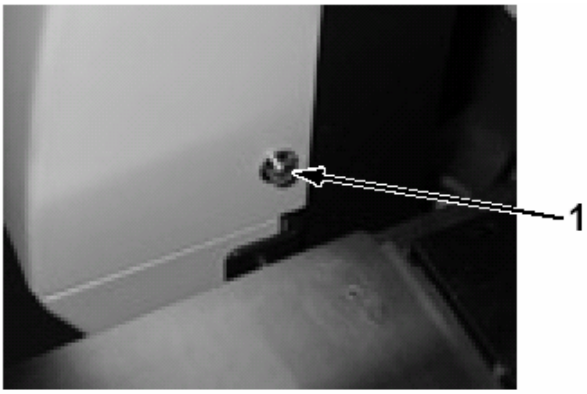
1 = Hexagon socket head cap screws (M5x18)

Step 8 : Replace the parts inside the printer.

Step 9 : Reinstall all parts in the opposite order of the removal procedure.

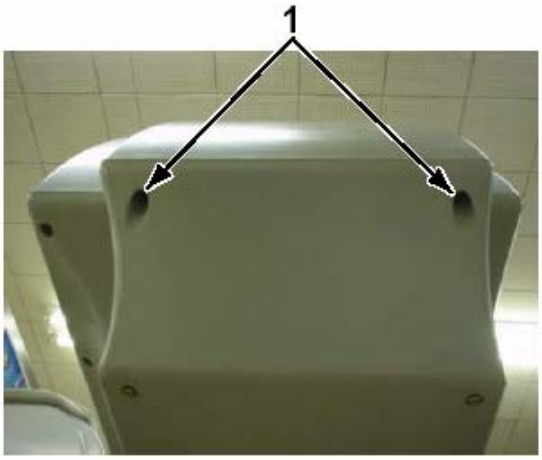
4.2.3. Removing side cover L

Step 1 : Remove the screw from the side of the upper part of side cover L.



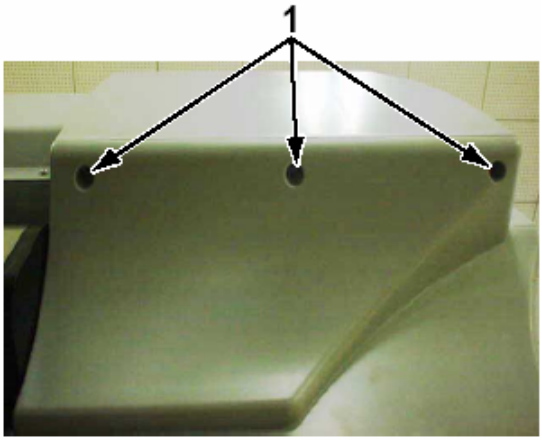
1 = Screws (M4x12) on the side of the upper part of the side cover L

Step 2 : Remove the 2 screws from the front of the bottom of side cover L.



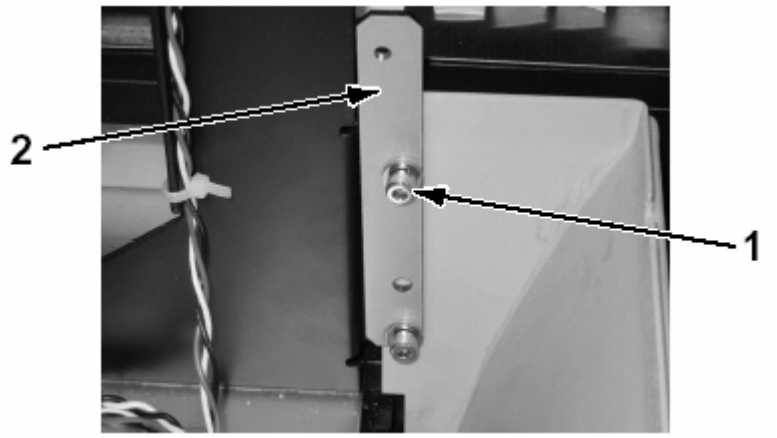
1 = Screws (4x16) on the back of the bottom of side cover L

Step 3 : Remove the 3 screws from the back of the bottom of side cover L.



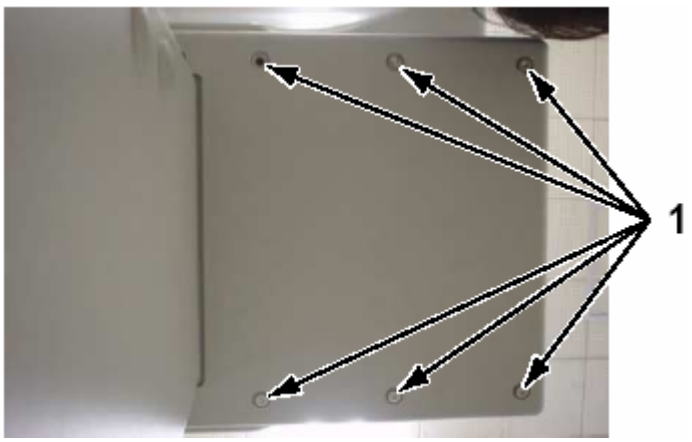
1 = Screws (M4x16) on the rear of the bottom part of the side cover L

Step 4 : Remove the 4 bolts and cover nut from the front and back of the inner surface on the bottom of side cover L.



1 = Hexagon socket head cap screws (M4x16)	2 = Cover nut

Step 5 : Remove the 6 bolts from the front and back of the bottom surface on the bottom of side cover L.



1 = Hexagon socket head cap screws (M5x18)

Step 6 : Remove the bottom of side cover L.

Step 7 : Replace the parts inside the printer.

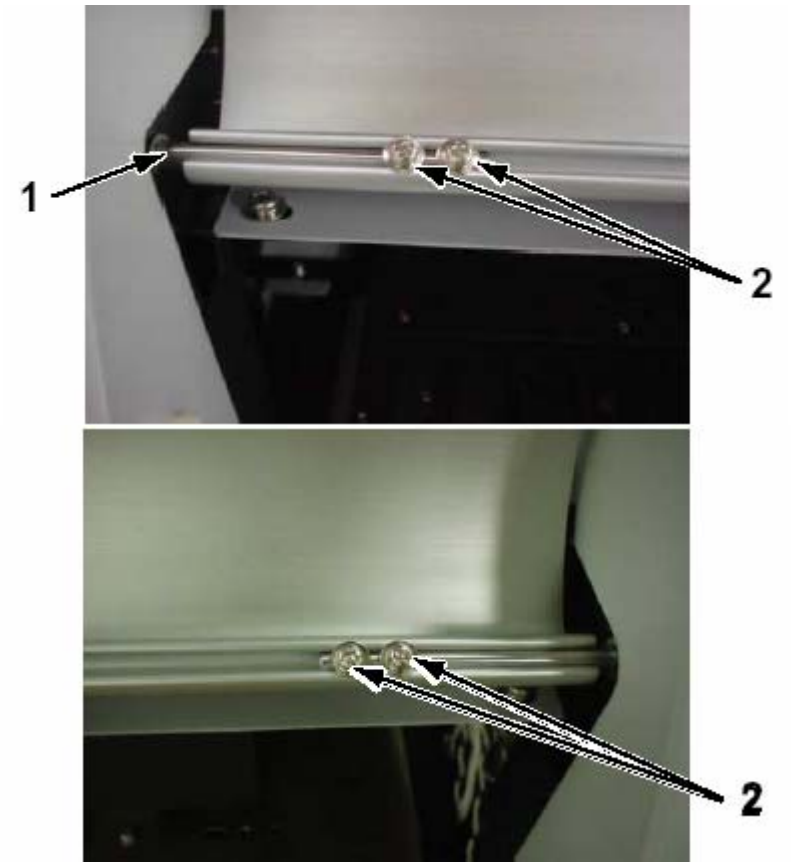
Step 8 : Reinstall all parts in the opposite order of the removal procedure.

4.2.4. Removing the front cover

Step 1 : Open the front cover.

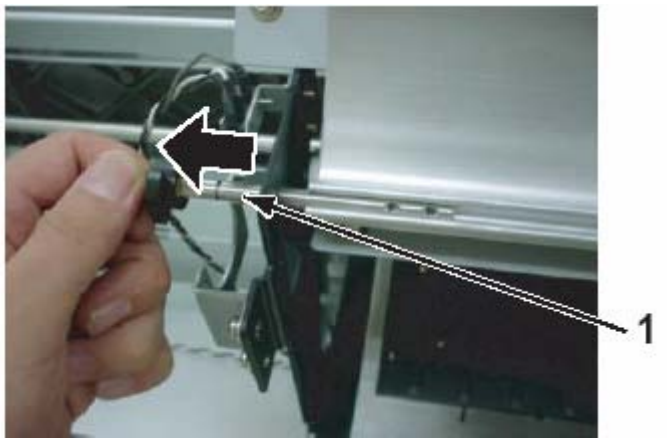
Step 2 : Remove the E ring on the left side.

Step 3 : Remove the 4 screws on the left and right cover spindles.



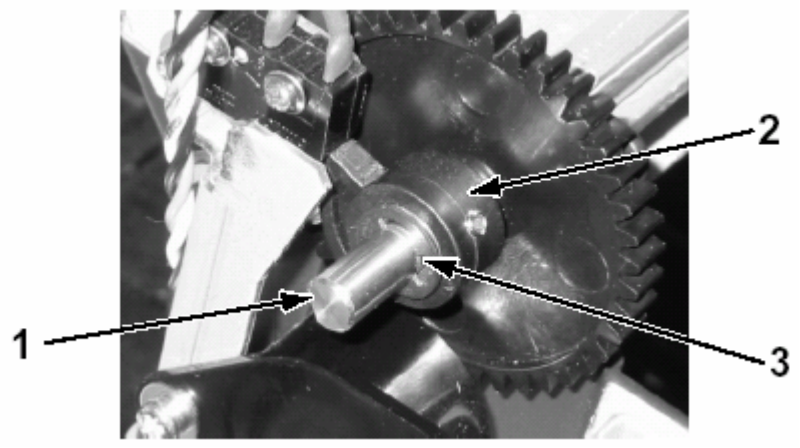
1 = E ring	2 = Screws (M3x8) on the left and right cover spindles

Step 4 : If the machine is a 50-inch model, remove cover spindle L, and then slide and remove the front cover.



1 = Cover spindle L

Step 5 : If the machine is 64 or 87-inch model, remove the E ring and the sensor cam, push the cover spindle L to the origin side and then slide and remove the front cover.



1 = Cover spindle L	2 = Sensor cam
3 = E ring	

Step 6 : Reinstall all parts in the opposite order of the removal procedure.

4.2.5. Removing the carriage cover

Caution :

Please note that this cover is only on a Rockhopper II (2 heaters) printer.

Step 1 : Remove the I/H cover.

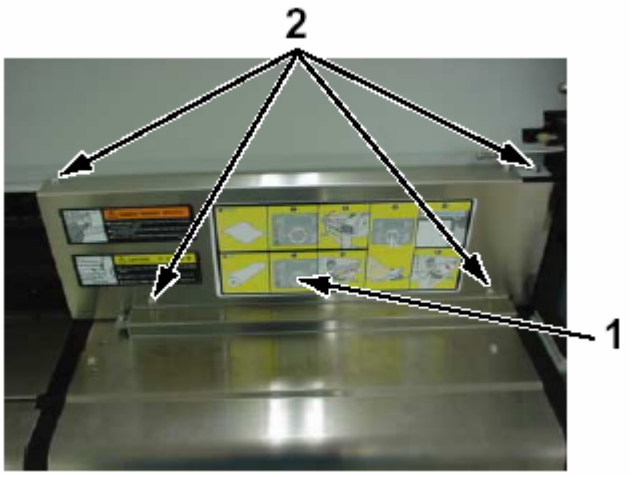
Step 2 : Remove side cover R.

Step 3 : Remove side cover L.

Step 4 : Remove the front cover.

Step 5 : Remove the 4 screws fixing the carriage cover.

Step 6 : Remove the carriage cover.



1 = Carriage cover	2 = Screws (M3x6) fixing the carriage cover

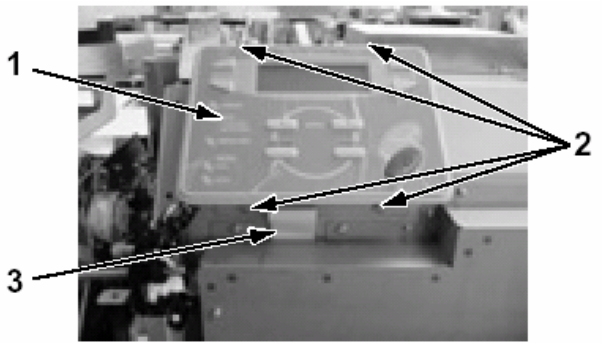
Step 7 : Reinstall all parts in the opposite order of the removal procedure.

4.2.6. Removing the panel unit assembly

Step 1 : Remove side cover R.

Step 2 : Remove the panel tape power cord.

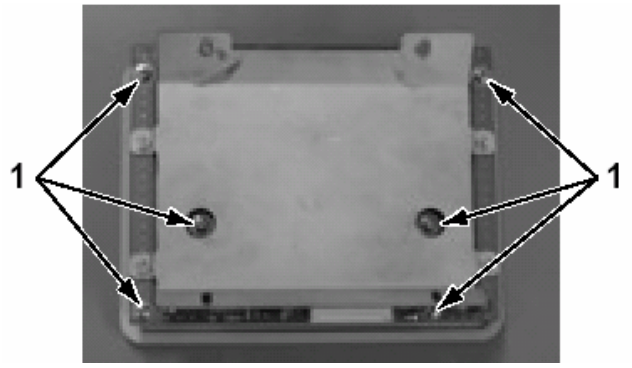
Step 3 : Remove the 4 screws fixing the panel base.



1 = Panel unit assembly	2 = Screws (M3x6) fixing the panel unit assembly
3 = Tape wire	

Step 4 : Remove the panel unit assembly.

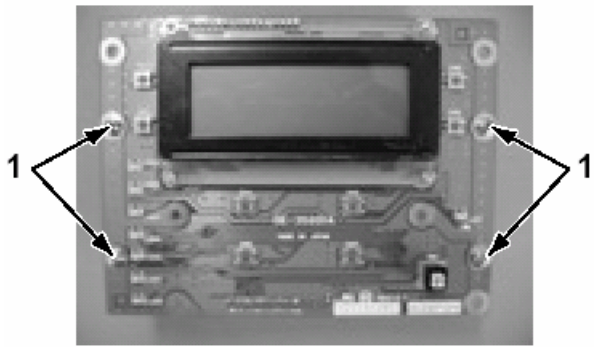
Step 5 : Remove the 6 screws fixing the panel board assembly and the panel cover.



1 = Screws (M3x8) fixing the panel cover

Step 6 : Remove the panel cover.

Step 7 : Remove the 4 screws fixing the panel bracket and the panel board assembly.



1 = Screws (M3x8) fixing the panel board assembly

Step 8 : Replace the panel board assembly.

Step 9 : Reinstall all parts in the opposite order of the removal procedure.

4.2.7. Removing the Y rail cover

Caution :

Removing the Y rail cover, should be performed by at least two persons.
Otherwise the Y rail cover may be deformed.

Step 1 : Remove side cover R.

Step 2 : Remove side cover L.

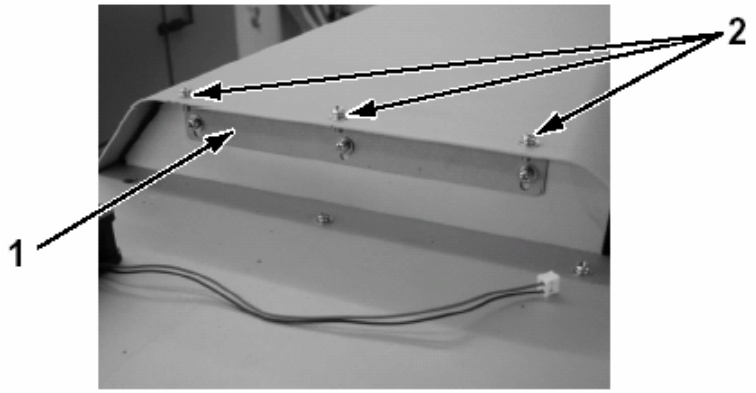
Step 3 : Remove the front cover.

Step 4 : Remove the carriage cover.

Caution :

Please note that this cover is only on a Rockhopper II (2 heaters) printer.

Step 5 : Remove the 3 screws fixing the Y rail cover and the Y rail cover FG.



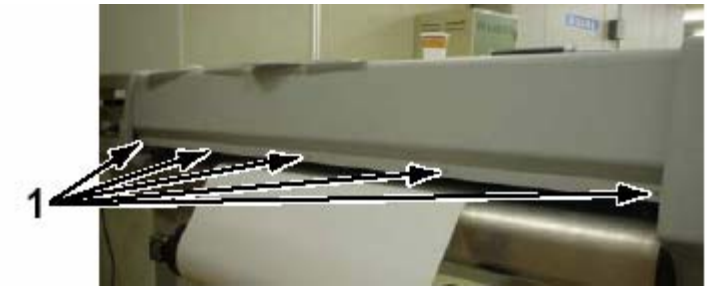
1 = Y rail cover FG	2 = Screws (M3x6) fixing the Y rail cover and the Y rail cover FG

Step 6 : Remove the 6 screws from the front of the Y rail cover.

1 = Screws (M4x8) on the front of the Y rail cover

Step 7 : Remove the 5 screws from the rear of the Y rail cover.

- If the machine is an 87-inch model, there are 8 screws on the rear Y rail cover.



1 = Screws (M4x8) on the rear of the Y rail cover

Step 8 : Remove the Y rail cover.

Step 9 : Replace the parts inside the printer.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

4.2.8. Removing front paper guide

Step 1 : Remove side cover L.

Step 2 : Remove side cover R.

Step 3 : Remove the front cover.

Step 4 : Remove the carriage cover.

Caution :

Please note that this cover is only on a Rockhopper II (2 heaters) printer.

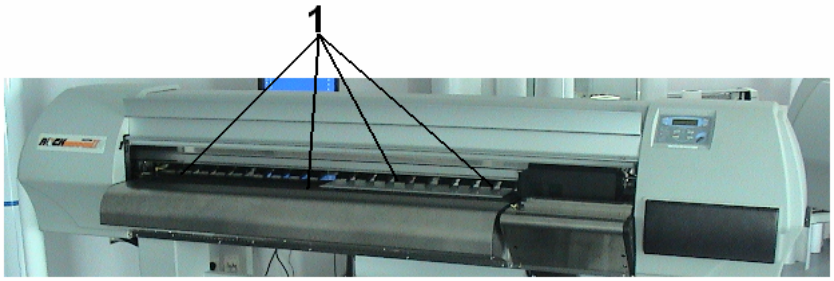
Step 5 : Remove the Y rail cover.

Step 6 : Remove the screws from the top of front media guide.

Notes :

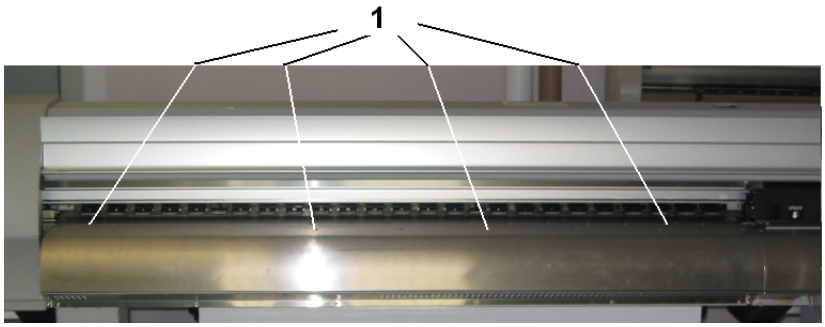
- Please note that the amount of screws is size dependent.

Rockhopper II 2 heater



1 = Screws on the top of front media guide

Rockhopper II 4 heater



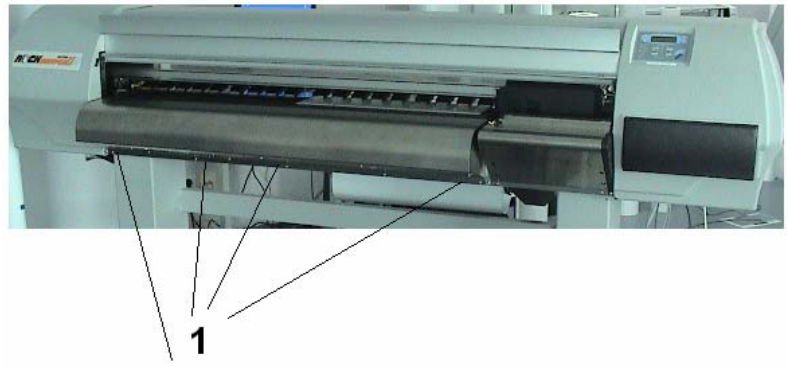
1 = Screws on the top of front media guide

Step 7 : Remove the screws from the front of front media guide.

Notes :

- Please note that the amount of screws is size dependent.

Rockhopper II 2 heater



1 = Screws on the front of front media guide

Rockhopper II 4 heater

1 = Screws on the front of front media guide

Step 8 : Standing before the unit move the front paper guide towards you.

Step 9 : Loosen the cables from their cable clamps.

Step 10 : Carefully loosen the connectors

Notes :

- Be sure not to damage the cables or connectors.

Step 11 : Remove the front paper guide.

Step 12 : Replace the parts inside the printer.

Step 13 : Reinstall all parts in the opposite order of the removal procedure.

4.2.9. Removing rear paper guide

Step 1 : Remove side cover L.

Step 2 : Remove side cover R.

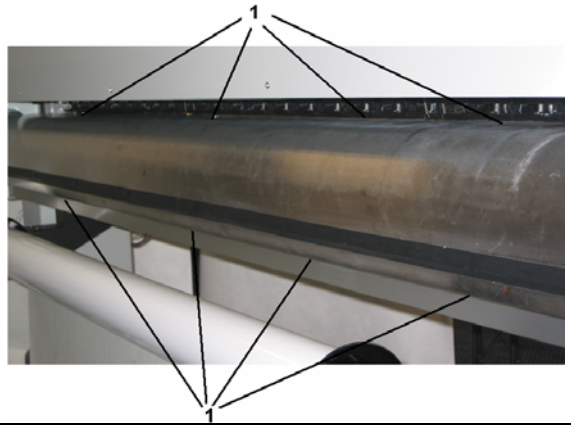
Step 3 : Remove the front cover.

Step 4 : Remove the Y rail cover.

Step 5 : Remove the screws from the top of the rear media guide.

Notes :

- Please note that the amount of screws is size dependent.



1 = Screws on the rear paper guide

Step 6 : Remove the screws from the rear of rear paper guide.

Notes :

- Please note that the amount of screws is size dependent.

Step 7 : Standing at the rear of the unit move the rear paper guide towards you.

Step 8 : Loosen the cables from their cable clamps.

Step 9 : Carefully loosen the connectors

Notes :

- Be sure not to damage the cables or connectors.

Step 10 : Remove the rear paper guide.

Step 11 : Replace the parts inside the printer.

Step 12 : Reinstall all parts in the opposite order of the removal procedure.

4.2.10. Removing the head cover

Step 1 : Remove the I/H cover.

Step 2 : Remove side cover R.

Step 3 : Remove side cover L.

Step 4 : Remove the front cover.

Step 5 : Remove the carriage cover.

Caution :

Please note that this cover is only on a Rockhopper II (2 heaters) printer.

Step 6 : Remove the Y rail cover.

Step 7 : Unlock the head.

Notes :

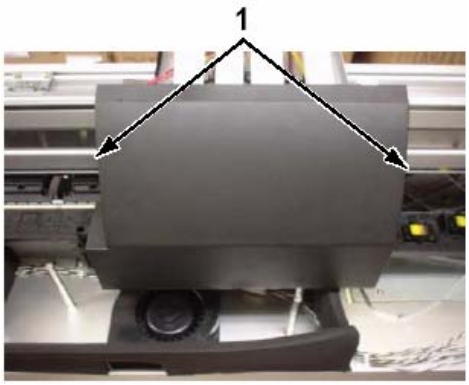
- Please refer to the 'Head lock menu'.

Step 8 : Pull the head out to the left of the maintenance station.

Caution :

When pulling the head out, do not press on the cutter cap. Doing so could damage the cutter blade.

Step 9 : Remove the 2 screws fixing the head cover.



1 = Screws (M3x8) fixing the head cover

Step 10 : Remove the head cover.

Step 11 : Replace the parts inside the printer.

Step 12 : Reinstall all parts in the opposite order of the removal procedure.

4.2.11. Removing the maintenance cover

Step 1 : Remove the I/H cover.

Step 2 : Remove side cover R.

Step 3 : Remove side cover L.

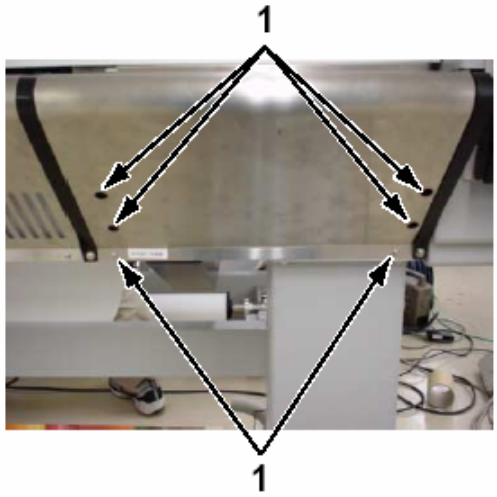
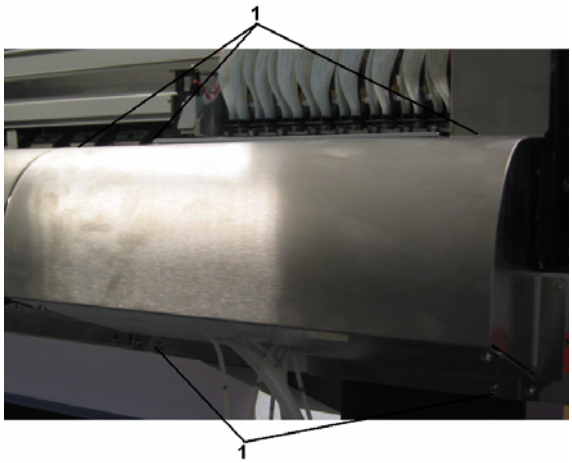
Step 4 : Remove the front cover.

Step 5 : Remove the carriage cover.

Caution :

Please note that this cover is only on a Rockhopper II (2 heaters) printer.

Step 6 : Remove the 6 screws fixing the maintenance cover.

Rockhopper II 2 heater	Rockhopper II 4 heater
	
1 = Screws (M3x8)	1 = Screws (M3x8)

Step 7 : Remove the maintenance cover.

Step 8 : Replace the parts inside the printer.

Step 9 : Reinstall all parts in the opposite order of the removal procedure.

4.3. REPLACEMENT OF THE HEATER ELEMENT

To replace a heater element of the Rockhopper II series printer, please follow the instructions mentioned in the explanation of the appropriate heater element.

1. Rockhopper II :
- 1. Replacing the front heater (Heater D) on a Rockhopper II printer
- 2. Replacing the rear heater (Heater A) on a Rockhopper II printer

2. Rockhopper II 4H :
- 1. Replacing the dryer (Heater D) on a Rockhopper II 4H printer
- 2. Replacing the post-fixer (Heater C) on a Rockhopper II 4H printer
- 3. Replacing the fixer (Heater B) on a Rockhopper II 4H printer
- 4. Replacing the heater (Heater A) on a Rockhopper II 4H printer

Caution :

- In case the fuse of the heating element is locked, do not replace the fuse but replace the appropriate heater element. Installation of a fuse of the heater element needs to be done in a special production environment.

Important :

Before replacing parts, be sure to perform the following operations.
- **Turn the machine power OFF.**
- **Remove the product's electrical plug from the socket. Otherwise, you may suffer electric shock or the machine's electric circuits may be damaged.**
- **Disconnect all cables from the machine. Not doing so could cause damage to the printer.**

4.3.1. Rockhopper II 2 heaters : Heater elements

4.3.1.1. Replacing the front heater (Heater D) on a Rockhopper II printer

Before replacing the front heater, make sure to have following items:
- 50" model : Heat Strip Assy Front 1 50 and Heat Strip Assy Front 2 50
- 64" model : Heat Strip Assy Front 1 64 and Heat Strip Assy Front 2 64
- 87" model : Heat Strip Assy Front 1 87 and Heat Strip Assy Front 2 87
- 4 x sensor insul. Patch

To replace the front heater on a Rockhopper II printer, please follow the instructions mentioned below.

Step 1 : Remove side cover L.

Step 2 : Remove side cover R.

Step 3 : Remove the front cover.

Step 4 : Remove the carriage cover.

Step 5 : Remove the Y rail cover.

Step 6 : Remove the front paper guide.

Step 7 : Remove the front heater strip(s).

Step 8 : Degrease the plate.

Notes :

- Make sure the plate is cleaned properly. Dust, glue and other parts must be removed.

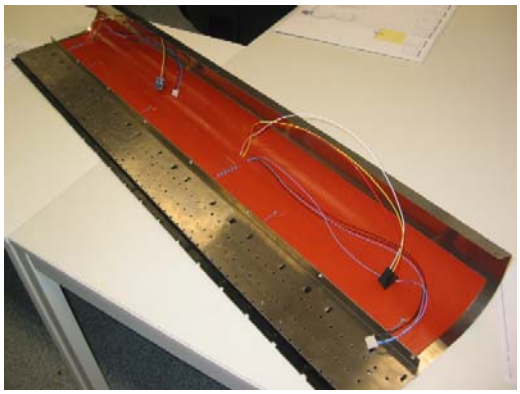
Step 9 : Stick the front heater strip(s) onto the plate.

Notes :

- Make sure that the strips connect properly.
- Please make sure that the sensor (blue blocks) are positioned on the flat surface of the front paper guide.

Notes :

- Please make sure that there are no air bubbles under the heater strip. Air bubbles below the heater strip could cause overheating of the heater strip.



Step 10 : Stick onto the sensor an isolation strip.

Step 11 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- During reinstallation of the plate, make sure there are no cables stuck.

4.3.1.2. Replacing the rear heater on a Rockhopper II printer

Before replacing the post fixer, make sure to have following items:

- 50" model : Heater strip assy rear 50
- 64" model : Heater strip assy rear 64
- 87" model : Heater strip assy rear 87
- 2 x press plate
- Silicone glue

To replace the rear heater on a Rockhopper II printer, please follow the instructions mentioned below.

Step 1 : Remove side cover L.

Step 2 : Remove side cover R.

Step 3 : Remove the front cover.

Step 4 : Remove the Y rail cover.

Step 5 : Remove the rear paper guide.

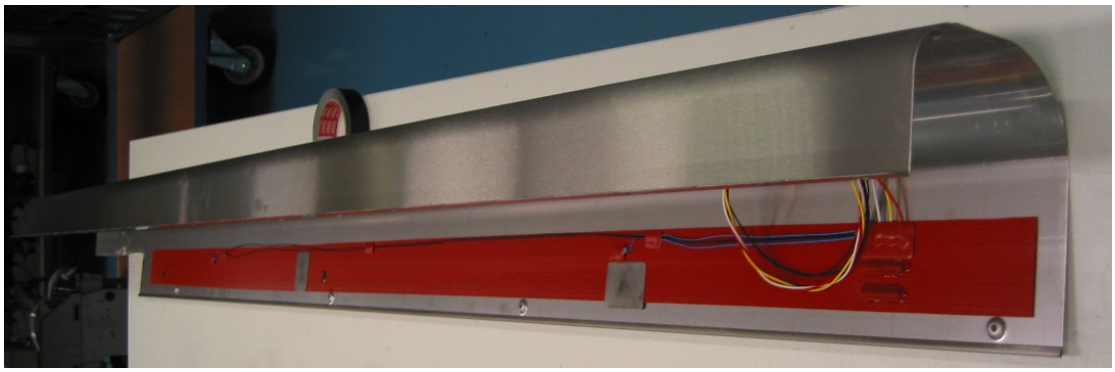
Step 6 : Remove the rear heater strip.

Step 7 : Degrease the plate.

Notes :

- Make sure the plate is cleaned properly. Dust, glue and other parts must be removed.

Step 8 : Stick the rear heater strip onto the plate.



Step 9 : Stick (with silicone glue) the two press plates onto the heater strip.

- 50" model : X = 380 mm
- 64" model : X = 380 mm / Y = 1060 mm
- 87" model : X = 660 mm / Y = 1200 mm / Z = 1750 mm

Notes :

- It will take ± 1 hour to let the glue dry.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- During reinstallation of the plate, make sure there are no cables stuck.

4.3.2. Rockhopper II 4 heaters : Heater elements

4.3.2.1. Replacing the dryer (Heater D) on a Rockhopper II 4H printer

Before replacing the dryer, make sure to have following items:

- 50" model : Dryer D1 50 and Dryer D2 50
- 64" model : Dryer D1 64 and Dryer D2 64
- 87" model : Dryer D1 87 and Dryer D2 872 x sensor insul. Patch

To replace the dryer on a Rockhopper II 4H printer, please follow the instructions mentioned below.

Step 1 : Remove side cover L.

Step 2 : Remove side cover R.

Step 3 : Remove the front cover.

Step 4 : Remove the Y rail cover.

Step 5 : Remove the front paper guide.

Step 6 : Remove the dryer strip(s).

Step 7 : Degrease the plate.

Notes :

- Make sure the plate is cleaned properly. Dust, glue and other parts must be removed.

Step 8 : Stick the dryer strip(s) onto the plate.

Notes :

- Make sure that the strips connect properly.
- Please make sure that the sensor (blue blocks) are positioned on the flat surface of the front paper guide.
- Stick it as close as possible to the assembly holes. Make sure it does not touch the assembly holes.

Notes :

- Please make sure that there are no air bubbles under the heater strip. Air bubbles below the heater strip could cause overheating of the heater strip.

Step 9 : Stick onto the sensors a sensor insul. patch.

1 = sensor insul. patch	2 = assembly hole

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- During reinstallation of the plate, make sure there are no cables stuck.

4.3.2.2. Replacing the post fixer (Heater C) on a Rockhopper II 4H printer

Before replacing the heater, make sure to have following items:

- 50" model : Post Fixer C 50
- 64" model : Post Fixer C 64
- 87" model : Post Fixer C 87
- 1 x sensor insul. Patch

To replace the post fixer on a Rockhopper II 4H printer, please follow the instructions mentioned below.

Step 1 : Remove side cover L.

Step 2 : Remove side cover R.

Step 3 : Remove the front cover.

Step 4 : Remove the Y rail cover.

Step 5 : Remove the front paper guide.

Step 6 : Remove the post fixer strip.

Step 7 : Degrease the plate.

Notes :

- Make sure the plate is cleaned properly. Dust, glue and other parts must be removed.

Step 8 : Stick the post fixer strip onto the plate.

Notes :

- Make sure that the strips connect properly.
- Stick it as close as possible to the assembly holes. Make sure it does not touch the assembly holes.

Notes :

- Please make sure that there are no air bubbles under the heater strip. Air bubbles below the heater strip could cause overheating of the heater strip.

Step 9 : Stick onto the sensor a sensor insul. patch.

1 = sensor insul. patch	2 = assembly hole

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- During reinstallation of the plate, make sure there are no cables stuck.

4.3.2.3. Replacing the fixer (Heater B1 and Heater B2) on a Rockhopper II 4H printer

Before replacing the fixer, make sure to have following items:

- 50" model : Fixer B1 50 and Fixer B2 50
- 64" model : Fixer B1 64 and Fixer B2 64
- 87" model : Fixer B1 87 and Fixer B2 87
- Isolation tape
- Plot platform calibre

To replace the fixer on a Rockhopper II 4H printer, please follow the instructions mentioned below.

Step 1 : Remove side cover L.

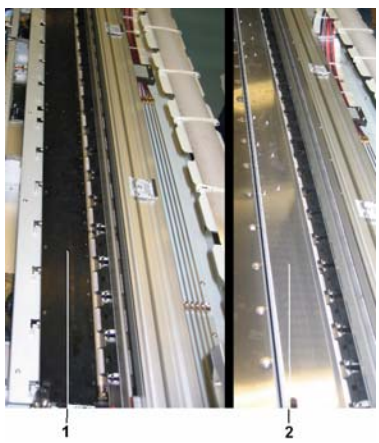
Step 2 : Remove side cover R.

Step 3 : Remove the front cover.

Step 4 : Remove the Y rail cover.

Step 5 : Remove the front paper guide.

Step 6 : Place the plot platform calibre onto the plot platforms.



1 = plot platforms	2 = plot platform calibre onto the plot platforms

Step 7 : Fix the plot platform calibre onto the plot platform.

1 = Fix plot platform caliber	2 = reachable screws of plot platform

Notes :

- Make sure the screws of the plot platform are reachable.

Step 8 : Remove the screws of the plot platform.

1 = screws plot platform

Step 9 : Pull upwards the plot platform calibre and so remove the plot platform with fixer.

Step 10 : Remove the fixer.

Step 11 : Degrease the plot platform.

Notes :

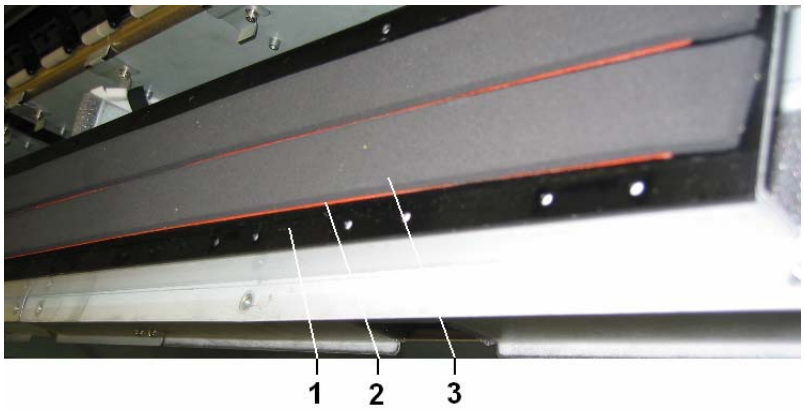
- Make sure the plate is cleaned properly. Dust, glue and other parts must be removed.

Step 12 : Stick the two fixer strips onto the plot platform.

Notes :

- Please make sure that there are no air bubbles under the heater strip. Air bubbles below the heater strip could cause overheating of the heater strip.

Step 13 : Stick the isolation tape onto the heater strips.



1 = plot platform	2 = fixer heater strip
3 = isolation tape	

Step 14 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- During reinstallation of the plate, make sure there are no cables stuck.

4.3.2.4. Replacing the heater (Heater A) on a Rockhopper II 4H printer

Before replacing the post fixer, make sure to have following items:

- 50” model : Heater A 50
- 64” model : Heater A 64
- 87” model : Heater A 87
- 2 x press plate
- Silicone glue

To replace the heater on a Rockhopper II 4H printer, please follow the instructions mentioned below.

Step 1 : Remove side cover L.

Step 2 : Remove side cover R.

Step 3 : Remove the front cover.

Step 4 : Remove the Y rail cover.

Step 5 : Remove the rear paper guide.

Step 6 : Remove the heater strip.

Step 7 : Degrease the plate.

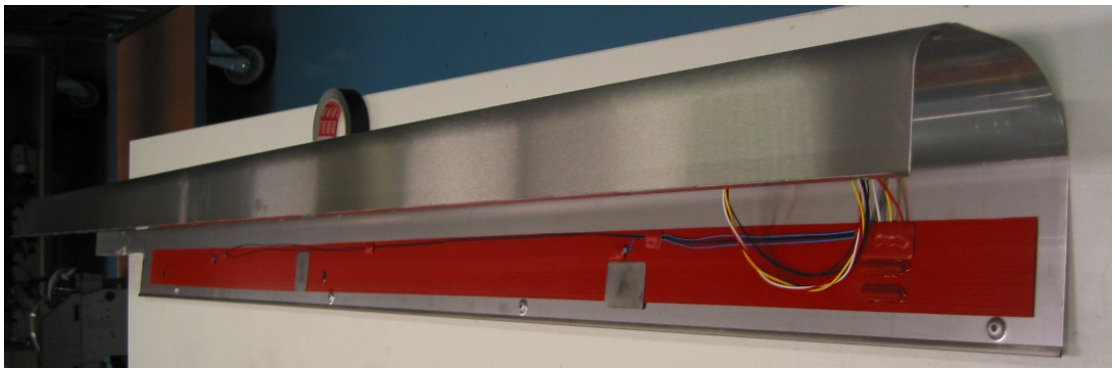
Notes :

- Make sure the plate is cleaned properly. Dust, glue and other parts must be removed.

Step 8 : Stick the heater strip onto the plate.

Notes :

- Please make sure that there are no air bubbles under the heater strip. Air bubbles below the heater strip could cause overheating of the heater strip.



Step 9 : Stick (with silicone glue) the two press plates onto the heater strip.

- 50” model : X = 380 mm
- 64” model : X = 380 mm / Y = 1060 mm
- 87” model : X = 660 mm / Y = 1200 mm / Z = 1750 mm

Notes :

- It will take ± 1 hour to let the glue dry.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- During reinstallation of the plate, make sure there are no cables stuck.

4.4. REPLACING BOARD BASES

This chapter explains the procedures for replacing the power source board assembly, mainboard assembly, PCI_Linux board assembly and cooling fan assembly.

Caution :

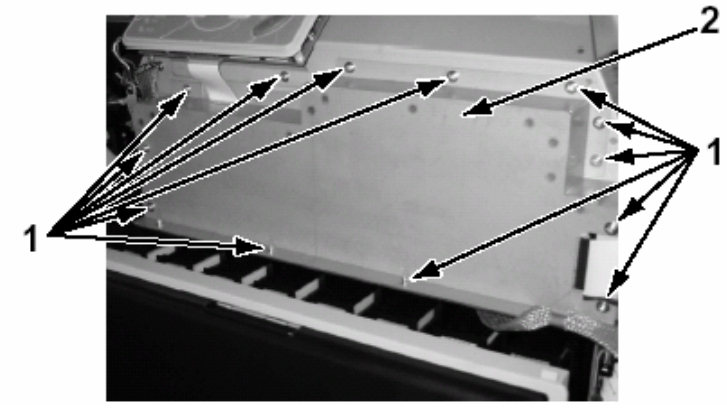
When handling circuit boards, do not touch the elements on the board with your bare hands. Doing so may cause static electricity and break the elements.

4.4.1 Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly, PCI_Linux board assembly and cooling fan assembly

Notes :

- To replace the board and connect or disconnect the FFC type cable, you should leave the plug disconnected from the power socket for a while. Otherwise, over-current could be generated and damage the board.
- When changing the main substrate assembly, follow "Parameter backup" to backup the parameter. Failure to do so could cause the life span counters for the waste fluid tank and tube not to reset, resulting in an overflow of ink inside the printer. See "Adjustment" for details of other adjustment.
- Remove the following parts before replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly, PCI_Linux board assembly and cooling fan assembly:
  - Panel unit assembly: "Removing the panel unit assembly"
  - Hard disk: "User's Guide"

Step 1 : Remove the 20 screws fixing the Mainboard cover 3.



1 = 2 Screws (M3x6) fixing the Mainboard cover	2 = Mainboard cover 3

Step 2 : Remove the Mainboard cover 3.

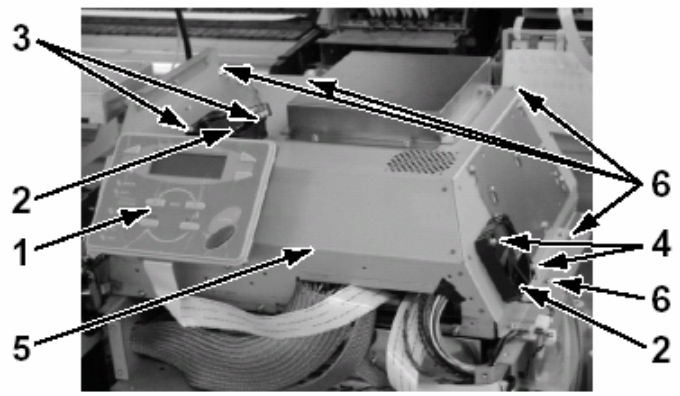
Step 3 : Follow the instructions in “Removing the panel unit assembly” to remove the panel unit assembly.

Step 4 : Remove the connector between the cooling fan cable and the cooling fan assembly.

Step 5 : Remove the 2 top and 2 bottom screws fixing the cooling fan assembly.

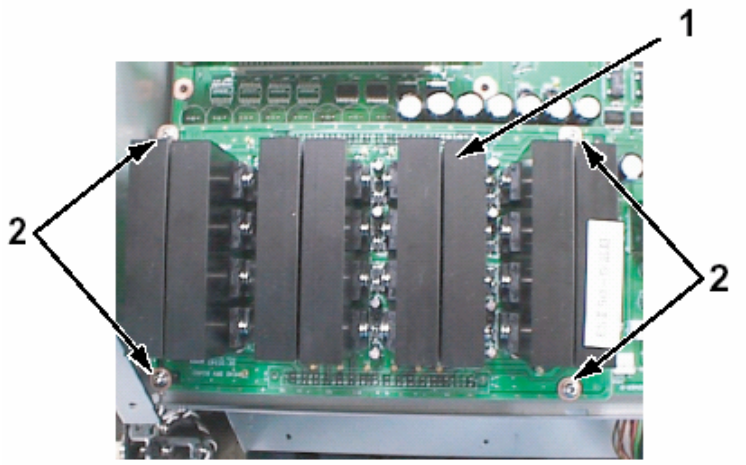
Step 6 : Replace the cooling fan assembly.

Step 7 : Remove the 15 screws fixing the Mainboard cover.



1 = Panel unit assembly	2 = Cooling fan assembly
3 = Screws (M3x25) fixing the cooling fan assembly	4 = Screws (M3x20) fixing the cooling fan assembly
5 = Mainboard cover	6 = Screws (M3x6) fixing the Mainboard cover

Step 8 : Remove the 4 screws fixing the HEAD_DRV board assembly.



1 = HEAD_DRV board assembly	2 = Screws (M3x6) fixing the HEAD_DRV board assembly

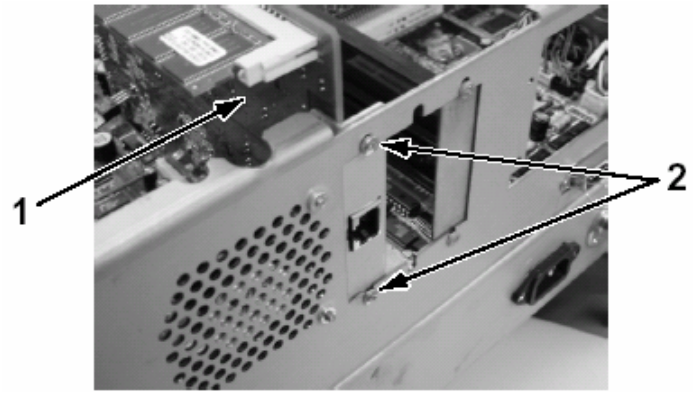
Step 9 : Replace the HEAD_DRV board assembly.

Step 10 : Remove FFC protection material between HEAD_DRV board assembly and Mainboard assembly.

Step 11 : Remove following connectors from the Mainboard assembly.

N°	Connector N°	# of pins	Colour	Connected to	Remarks
1	J101	12	White	Mainboard	Lock type
2	J102	6	White	Power	Lock type
3	J103	168		DIMM	
4	J104	68			
5	J105	28	White or black		Lock type
6	J106	120		PCI_LINUX board	
7	J107	120		PCI_LINUX board	
8	J108	120		PCI_LINUX board	
9	J109	39			
10	J110	96	White	HD_MOTHER board	
11	J111	3	White	Adhesion FAN 1	Free
12	J112	2	Blue	Adhesion FAN 2	For 50, 64, 87 inch spec
13	J113	2	Red	Adhesion FAN 3	For 50, 64, 87 inch spec
14	J114	2	Yellow	Adhesion FAN 4	For 50, 64, 87 inch spec
15	J115	2	Black	Adhesion FAN 5	For 50, 64, 87 inch spec.
16	J116	2	White	Adhesion FAN 6	For 87 inch spec.
17	J117	3	Yellow		Free
18	J118	3	Black	DRV_FAN 1	
19	J119				No preparation
20	J120	3	Red	Waste fluid BOX sensor cable	
21	J121	4	White	Ink cover sensor	
22	J122	5	White	Lever foot SW cable	
23	J123	4	Black	Lever up sensor	Transmission photosensor
24	J124	4	Yellow	Lever down sensor	Transmission photosensor
25	J125	6	White	Maintenance origin sensor cable	Transmission photosensor
26	J126				No preparation
27	J127	5	Red	Head slide sensor	
28	J128	5	Yellow	P_REAR_L sensor	
29	J129	4	Blue	P_REAR_R sensor	
30	J130	4		CR origin sensor	Transmission photosensor
31	J131	5	Black	Wiper origin sensor	Transmission photosensor
32	J132				No preparation
33	J133	30	White or black	JUNCTION board	Lock type
34	J134	30	White or black	JUNCTION board	Lock type
35	J135			HEAD_DRV board	
36	J136			HEAD_DRV board	
37	J137	30	White or black	CR board	Lock type
38	J138	30	White or black	CR board	Lock type
39	J139	30	White or black	CR board	Lock type
40	J140	30	White or black	CR board	Lock type
41	J141	30	White or black	CR board	Lock type
42	J142	30	White or black	CR board	Lock type
43	J143	30	White or black	CR board	Lock type
44	J144	30	White or black	CR board	Lock type
45	J145 (87)	30	White or black	CR board	Lock type

46	J146 (87)	30	White or black	CR board	Lock type
47	J147 (87)	30	White or black	CR board	Lock type
48	J148 (87)	30	White or black	CR board	Lock type
49	J149 (87)	30	White or black	CR board	Lock type
50	J150 (87)	30	White or black	CR board	Lock type
51	J151 (87)	30	White or black	CR board	Lock type
52	J152 (87)	30	White or black	CR board	Lock type
53	J153	5	Black		Free
54	J154	5	White	PF_ENC	
55	J155	3	White	Cover R sensor	
56	J156	3	Black	Cover L sensor	
57	J157	2	White	PF motor	Lock type
58	J158	3	White	CR motor	Lock type
59	J159	4	White	Lever motor	Lock type
60	J160	4	White	Pump 1 motor	
61	J161	5	White	Pump 2 motor	
62	J162	6	White	HEAD U/D motor	
63	J163	7	White	Maintenance U/D motor	
64	J164	4	White	Wiper motor	
65	J165				
66	J167	7	White	Interf. Cable Db9-Jst	



1 = PCI_Linux board assembly	2 = Screws fixing the PCI_Linux board assembly (M3x6)

Step 12 : Remove the 2 screws fixing the PCI_Linux board assembly.

Step 13 : Replace the PCI_Linux board assembly.

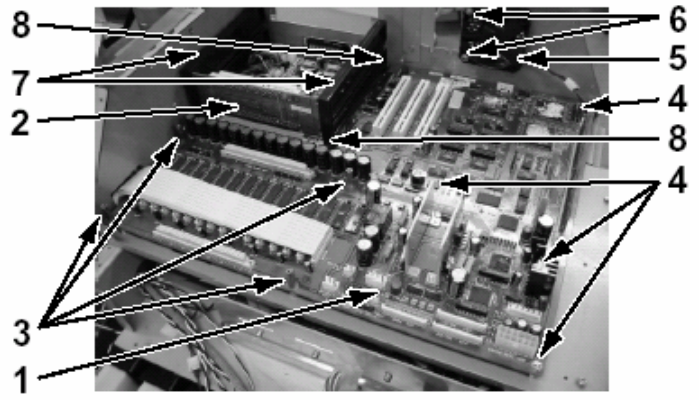
Step 14 : Remove the 2 screws fixing the cooling fan assembly.

Step 15 : Replace the cooling fan assembly.

Step 16 : Remove the 4 screws fixing the I/F guide.

Step 17 : Remove I/F guide.

Step 18 : Remove the 6 screws and 4 hexagon spacers fixing the Mainboard assembly.



1 = Mainboard assembly	2 = HDD_Extension board assembly
3 = Hexagon spacer	4 = Screws (M3x6)
5 = Cooling fan assembly	6 = Screws (M3x20) fixing the cooling fan assembly
7 = I/F guide	8 = Screws (M3x8) fixing the I/F guide

Step 19 : Replace the HDD_Extension board assembly.

Step 20 : Replace the Mainboard assembly.

Step 21 : Reinstall all parts in the opposite order of the removal procedure.

Step 22 : Perform media sensor sensitivity adjustment following the "Media sensor sensitivity adjustment" procedure.

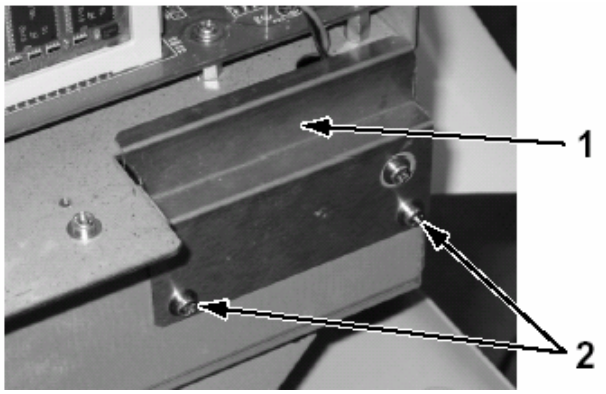
4.4.2. Replacing the power source board assembly

Caution :

When removing the power source board assembly, remove the power cable and set it aside for at least 5 minutes in order to completely discharge the electric charge remaining in the electrolytic capacitor before continuing with the procedure.
Touching the substrate before discharging the capacitor causes electric shock.

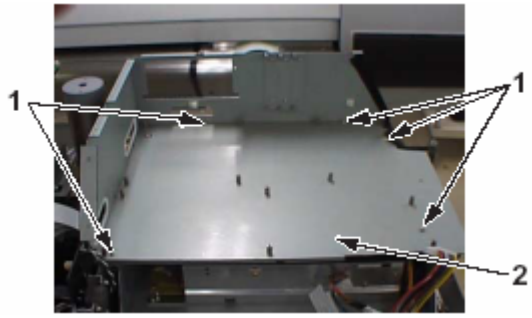
Step 1 : Follow the instructions in "Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly, PCI_Linux board assembly and cooling fan assembly" to remove the Mainboard assembly.

Step 2 : Remove the 2 screws fixing the PS board cover.



1 = PS board cover	2 = Screws (M3x6) fixing the PS board cover

Step 3 : Remove the 5 screws fixing the Mainboard base.



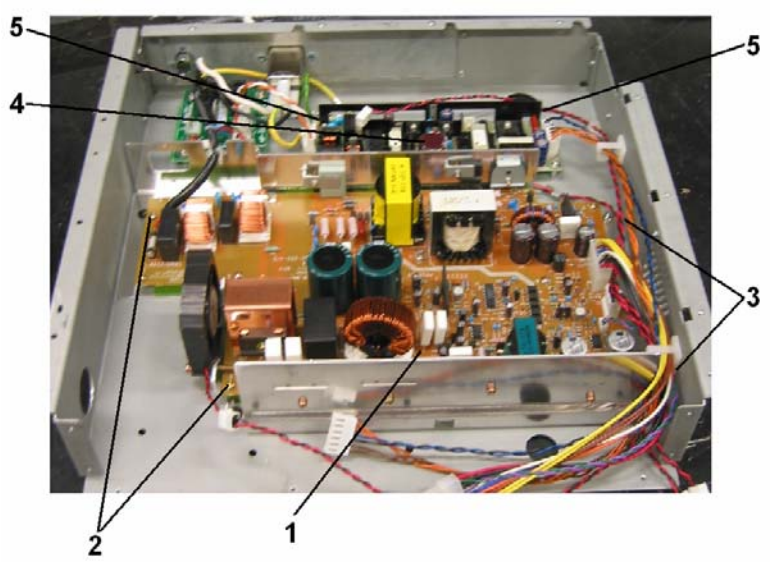
1 = Screws (M3x8) fixing the Mainboard base	2 = Mainboard base

Step 4 : Remove the Mainboard base.

Step 5 : Remove the following connectors from the power source board assembly.

N°	Connector N°	# of pins	Colour	Connected to	Remarks
1	CN2	3	White	Mainboard J101	
2	CN3	4	White	+ 5V adhesion FAN	Output four adhesion FAN
3	CN4	12	White	Mainboard J101	

Step 6 : Remove the 4 screws fixing the power source.



1 = Power source board assembly	2 = Screws (M4x8) fixing the power board assembly
3 = Hexagon nut fixing the power board assembly	4 = Power source
5 = Screws (M3x6) fixing the power source	

Step 7 : Replace the power source.

Step 8 : Remove the 2 screws and 2 hexagon nuts fixing the power source board assembly.

Step 9 : Remove the power source board assembly.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- When installing the mainboard assembly, be careful not to pinch the foot SW cables by the mainboard base.

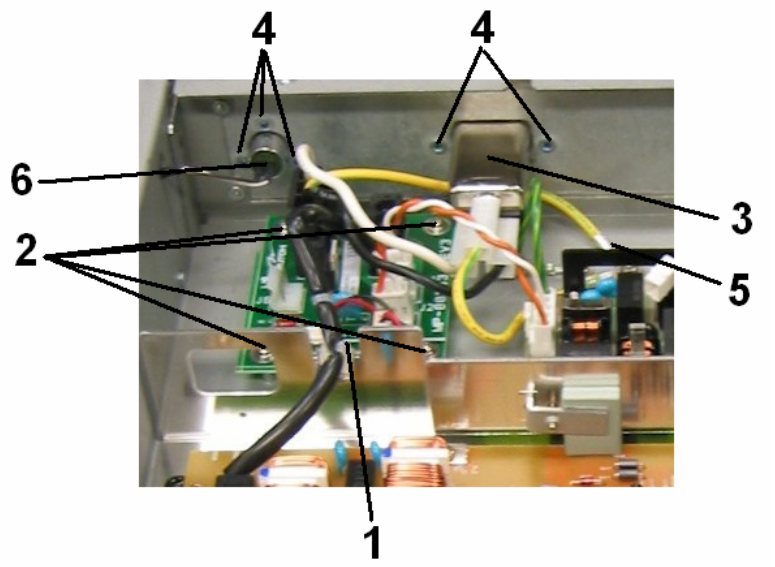
4.4.3. Replacing the inlet assembly, inlet board assembly and lever foot SW cable assembly

Step 1 : Follow the instructions in "Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly, PCI_Linux board assembly and cooling fan assembly" to remove the Mainboard assembly.

Step 2 : Follow step 2 to 4 in "Replacing the power source board assembly" to remove the Mainboard assembly.

Step 3 : Remove the connector between the inlet board assembly and the inlet assembly.

Step 4 : Remove the 4 screws fixing the inlet board assembly.



1 = Inlet board assembly	2 = Screws (M3x6) fixing the inlet board assembly
3 = Inlet assembly	4 = Screws (M3x6) fixing the inlet assembly and lever foot SW cable assembly
5 = Screw (M4x8) fixing the inlet assembly	6 = Lever foot SW cable assembly

Step 5 : Replace the inlet board assembly.

Step 6 : Remove the 3 screws fixing the inlet assembly.

Step 7 : Replace the inlet assembly.

Step 8 : Remove the 3 screws fixing the lever foot SW cable assembly.

Step 9 : Replace the lever foot SW cable assembly.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

4.4.4. Replacing the JUNCTION board assembly

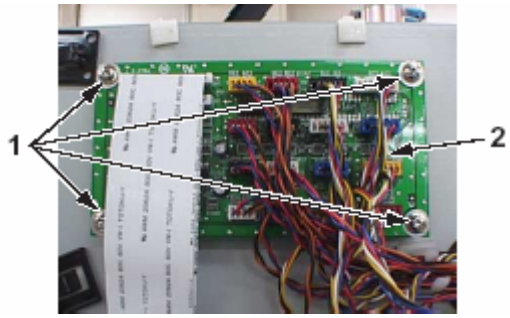
Notes :

- To replace board and connect or disconnect the FFC type cable, you should leave the plug disconnected from the power socket for a while. Otherwise, over-current could be generated and damage the board.
- Remove the following parts before replacing the JUNCTION board assembly.
  - I/H cover: refer to "Removing the I/H cover"
  - Side cover R: refer to "Removing side cover R"

Step 1 : Remove following connectors from the JUNCTION board assembly.

N°	Connector N°	# of pins	Colour	Connected to	Remarks
1	J401	30	White	Mainboard	Lock type or Plug-in
2	J402	30	White	Mainboard	Lock type or Plug-in
3	J403	4	White	Ink sensor K	Cartridge 1
4	J404	4	Black	Ink sensor C	Cartridge 2
5	J405	4	Red	Ink sensor M	Cartridge 3
6	J406	4	Yellow	Ink sensor Y	Cartridge 4
7	J407	4	Blue	Ink sensor LC	Cartridge 5
8	J408	5	White	Ink sensor LM	Cartridge 6
9	J409	5	Black	Ink sensor O	Cartridge 7
10	J410	5	Red	Ink sensor G	Cartridge 8
11	J411	5	Yellow	SC cable K	Cartridge 1
12	J412	5	Blue	SC cable C	Cartridge 2
13	J413	6	White	SC cable M	Cartridge 3
14	J414	6	Black	SC cable Y	Cartridge 4
15	J415	6		SC cable LC	Cartridge 5
16	J416	6	Yellow	SC cable LM	Cartridge 6
17	J417	6	Blue	SC cable O	Cartridge 7
18	J418	7	White	SC cable G	Cartridge 8

Step 2 : Remove the 4 screws fixing the JUNCTION board assembly.



1 = JUNCTION board assembly	2 = Screws (M3x6) fixing the JUNCTION board assembly

Step 3 : Replace the JUNCTION board assembly.

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

4.5. REPLACING THE PF ACTUATOR

4.5.1. Replacing the PF motor assembly

Caution :

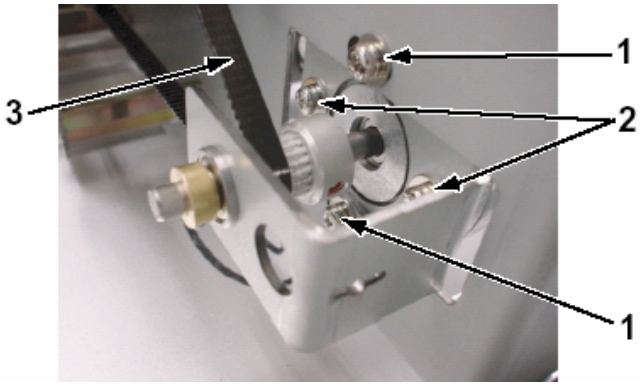
The motor is hot after the product has been operated, so be careful not to burn yourself.

Notes :

- Remove following covers before replacing the parts in the PF motor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Media guide F: refer to "Removing media guide F"

Step 1 : Remove the PF motor assembly connector from the PF motor cable assembly.

Step 2 : Remove the 2 screws fixing the X motor installation board to the side of the L side frame.



1 = Screws (M4x10) fixing the X motor installation board to the side of the L side frame.	2 = Screws (M4x10) fixing the PF motor assembly to the X motor installation board.
3 = PF deceleration belt	

Step 3 : Remove the 2 screws fixing the PF motor assembly to the X motor installation board.

Step 4 : Replace the PF motor assembly.

Notes :

- When installing the PF motor assembly, move the PF deceleration pulley manually and confirm that the PF deceleration belt is set equally in the center of the PF motor assembly pulley.

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

Step 6 : Adjust the tension of the PF deceleration belt according to "PF deceleration belt tension adjustment".

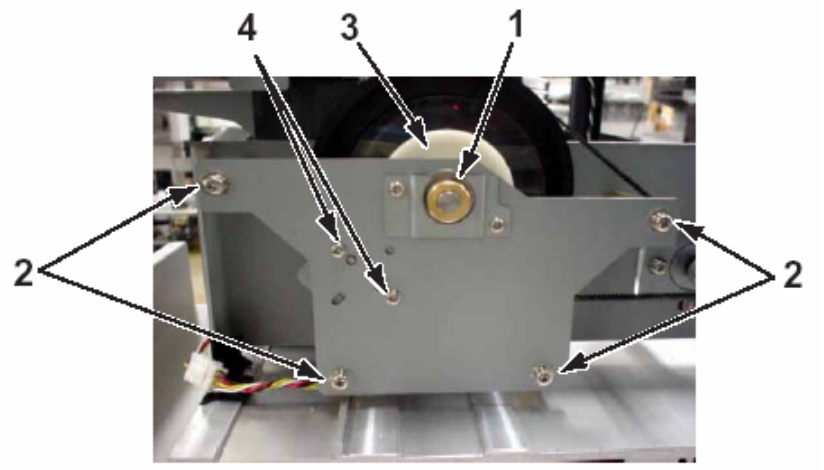
4.5.2. Replacing the PF_ENC assembly and PF scale assembly

Notes :

- Remove the following covers before replacing the PF_ENC assembly.
  - Side cover L: refer to "Removing side cover L"

Step 1 : Remove the PF_ENC assembly connector.

Step 2 : Remove the 2 screws fixing the PF encoder installation board.



1 = Bearing	2 = Screws (M3x6) fixing the PF scale installation board
3 = PF scale	4 = Screws (M4x10) fixing the PF encoder installation board

Step 3 : Remove the PF encoder installation board.

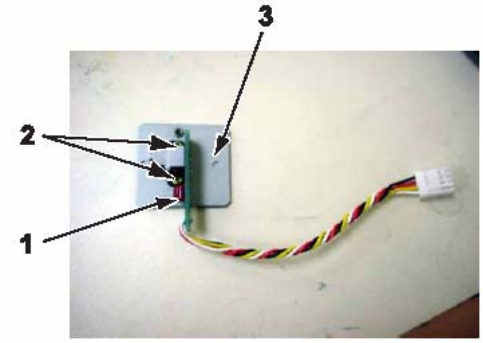
Step 4 : Remove the bearing.

Step 5 : Remove the 4 screws fixing the PF scale installation board.

Step 6 : Remove the PF scale installation board.

Step 7 : Replace the PF scale assembly.

Step 8 : Remove the screws fixing the PF_ENC assembly to the PF encoder installation board.



1 = PF_ENC assembly	2 = Screws (M2x6) fixing the PF_ENC assembly to the PF encoder installation board
3 = PF encoder installation board	

Step 9 : Replace the PF_ENC assembly.

Notes :

- When installing the PF_ENC assembly and the PF encoder installation board, make sure they are aligned with the locating bosses.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Step 11 : Adjust the tension of the PF deceleration belt according to "PF deceleration belt tension adjustment".

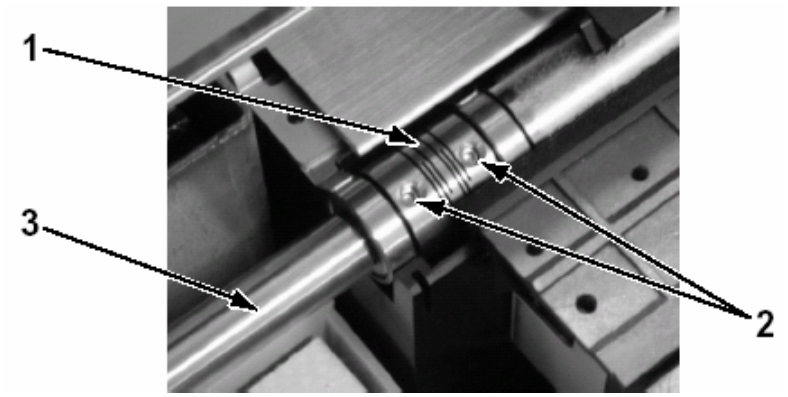
4.5.3. Replacing the PF deceleration pulley assembly

Notes :

- Remove following covers before replacing the parts in the PF motor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Media guide F: refer to "Removing media guide F"

Step 1 : Follow step 1 to 6 in "Replacing the PF_ENC assembly and PF scale assembly" to remove the PF scale installation board.

Step 2 : Loosen the set screw fixing the coupling.



1 = Coupling	2 = Set screw fixing the coupling
3 = Y deceleration pulley axis	

Step 3 : Pull the Y deceleration pulley to the opposite side of the origin and then remove the deceleration pulley assembly.

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

Step 5 : Adjust the tension of the PF deceleration belt according to "PF deceleration belt tension adjustment".

4.5.4. Replacing the PF deceleration belt

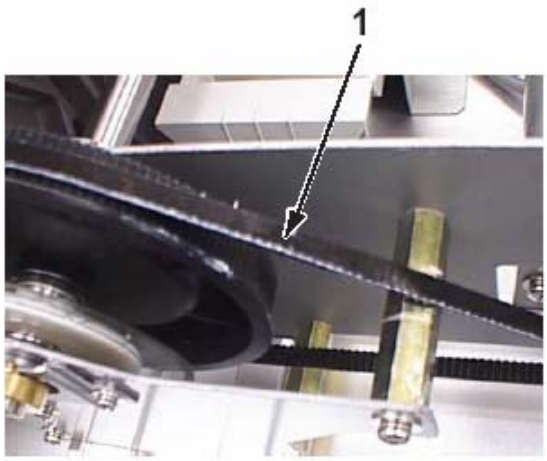
Notes :

- Remove following covers before replacing the parts in the PF motor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Media guide F: refer to "Removing media guide F"

Step 1 : Follow the instructions in "Replacing the PF motor assembly" to remove the PF motor.

Step 2 : Follow the instructions in "Replacing the PF_ENC assembly and PF scale assembly" to remove the PF_ENC assembly and the PF scale assembly.

Step 3 : Replace the PF deceleration belt.



1 = PF deceleration belt

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

Step 5 : Adjust the tension of the PF deceleration belt according to "PF deceleration belt tension adjustment".

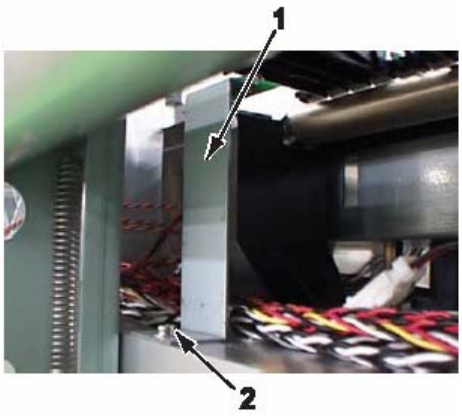
4.5.5. Replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly

Notes :

- Remove following covers before replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Media guide F: refer to "Removing media guide F"

Step 1 : Remove the connectors for the P_REAR_R sensor assembly and P_REAR_L sensor assembly from the Mainboard assembly.

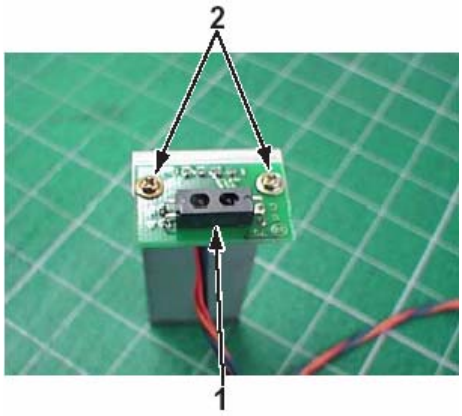
Step 2 : Remove the screw fixing the media sensor installation board.



1 = Media sensor installation board	2 = Screw (M3x8) fixing the media sensor installation board

Step 3 : Remove the media sensor installation board.

Step 4 : Remove the 2 screws fixing the P_REAR_R sensor assembly.



1 = P_REAR_R sensor assembly	2 = Screws (M2x5) fixing the P_REAR_R sensor assembly

Step 5 : Replace the P_REAR_R sensor assembly.

Step 6 : Use the same procedure to replace the P_REAR_L sensor assembly.

Step 7 : Reinstall all parts in the opposite order of the removal procedure.

4.5.6. Replacing the suction fan assembly

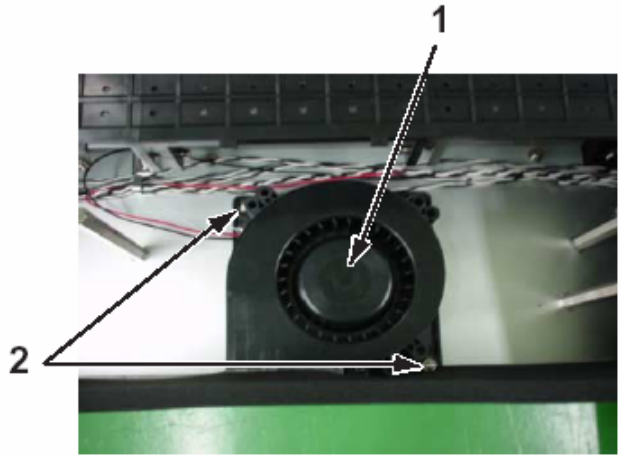
Notes :

- Remove following covers before replacing the suction fan assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Media guide F: refer to "Removing media guide F"

Step 1 : Remove the suction fan assembly connector from the suction fan cable assembly.

Step 2 : When replacing the suction fan cable assembly, first remove the connector from the Mainboard assembly.

Step 3 : Remove the 2 screws fixing the suction fan assembly.



1 = Suction fan assembly	2 = Screws (M3x12) fixing the suction fan assembly

Step 4 : Replace the suction fan assembly.

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

4.5.7. Replacing the lever motor assembly and the arm motor installation board

Caution :

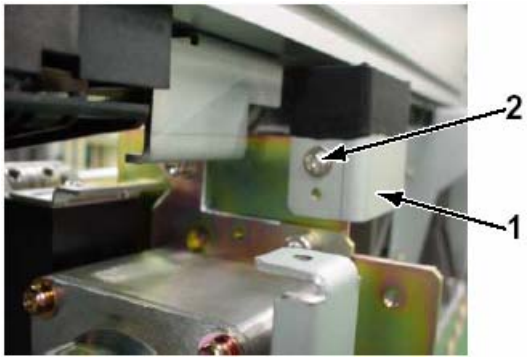
The motor is hot after the product has been operated, so be careful not to burn yourself.

Notes :

- Remove following covers before replacing the lever motor.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Media guide F: refer to "Removing media guide F"

Step 1 : Remove the lever motor assembly connector.

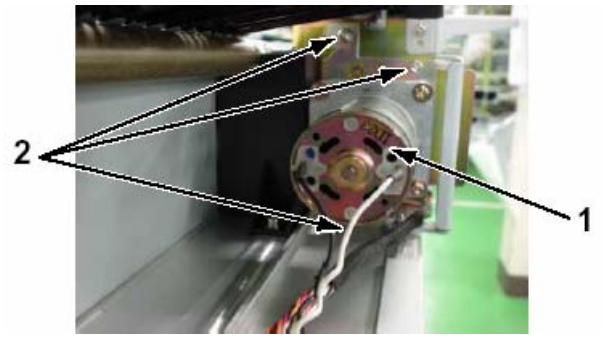
Step 2 : Remove the screw fixing the sensor installation board.



1 = Sensor installation board	2 = Screw (M3x8) fixing the sensor installation board

Step 3 : Remove the sensor installation board.

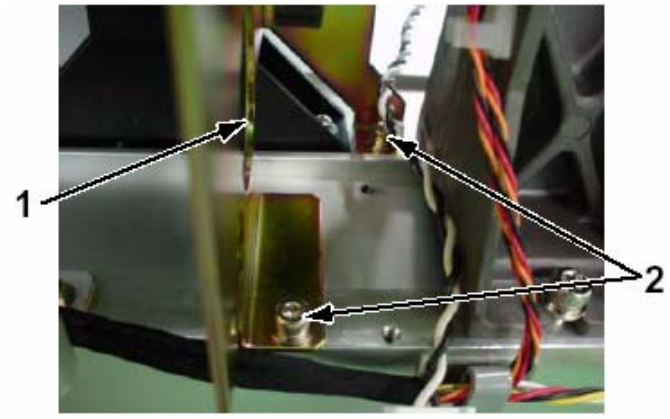
Step 4 : Remove the hexagon socket head screws with spring washers (3) fixing the CR motor assembly to the arm motor installation board.



1 = Lever motor assembly	2 = Hexagon socket head screws with spring washers (M4x10)

Step 5 : Replace the CR motor assembly.

Step 6 : Remove the hexagon socket head screws with spring washers (2) fixing the arm motor installation board.



1 = Arm motor installation board	2 = Hexagon socket head screws with spring washers (M4x10)

Step 7 : Replace the arm motor installation board.

Step 8 : Reinstall all parts in the opposite order of the removal procedure.

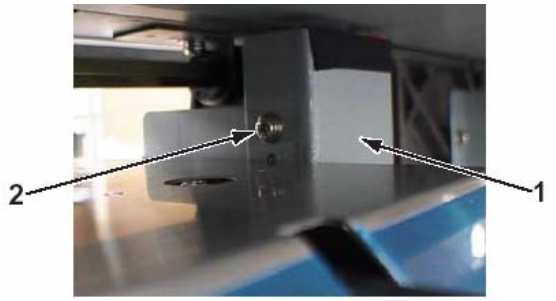
4.5.8. Replacing the transmission photosensor

Notes :

- Remove following covers before replacing the transmission photosensor.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

(1) Replacing the transmission photosensor (lever motor side)

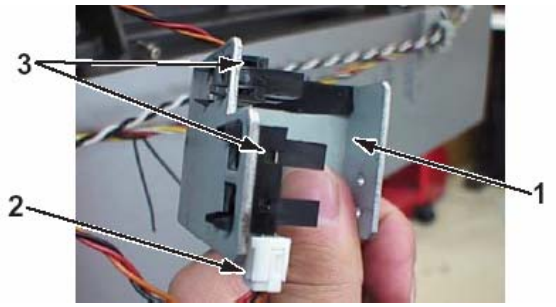
Step 1 : Remove the screw fixing the sensor installation board.



1 = Sensor installation board	2 = Screw (M3x8) fixing the sensor installation board

Step 2 : Remove the sensor installation board.

Step 3 : Remove the transmission photosensor from the sensor installation board.



1 = Sensor installation board	2 = Connector
3 = Transmission photosensor	

Step 4 : Remove the connector from the transmission photosensor.

Step 5 : Remove the transmission photosensor.

Step 6 : Apply the screw lock to the tab portions of the transmission photosensors to be installed.

Step 7 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- When installing the U/D cable assembly onto the transmission photosensor, be careful not to confuse the connectors.
  - Lever up cable assembly (white): front
  - Lever down cable assembly (blue): rear

(2) Replacing the transmission photosensor (CR origin side)

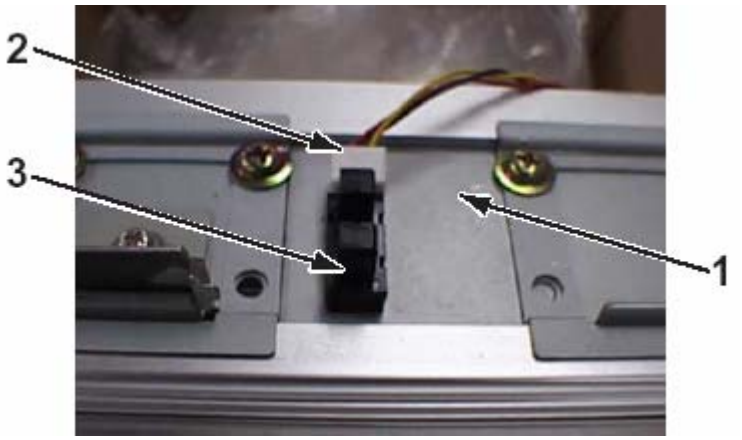
Notes :

- Refer to 'Head Lock Menu'

Step 1 : Unlock the head.

Step 2 : Move the carriage from the capping position to the left.

Step 3 : Remove the transmission photosensor from the ORG sensor installation board.



1 = ORG sensor installation board	2 = Connector
3 = Transmission photosensor	

Notes :

- The ORG sensor installation board has been adjusted at the origin in factory. Do not loosen the fixed screws.

Step 4 : Remove the connector from the transmission photosensor.

Step 5 : Remove the transmission photosensor.

Step 6 : Apply the screw lock to the tab portions of the transmission photosensors to be installed.

Step 7 : Reinstall all parts in the opposite order of the removal procedure.

4.5.9. Replacing the flushing box assembly

Notes :

- Remove following covers before replacing the flushing box assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

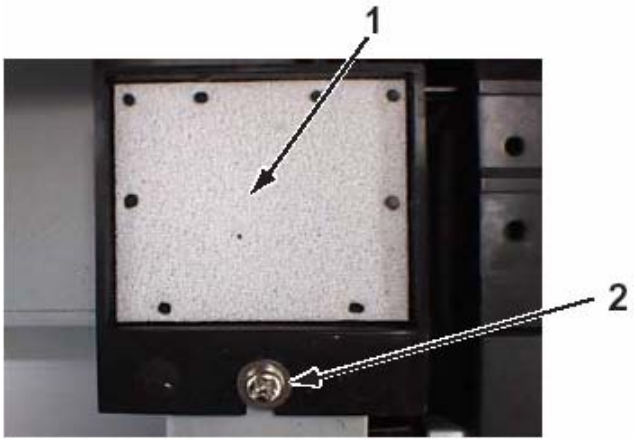
Step 1 : Unlock the head.

Notes :

- Refer to 'Head Lock Menu'

Step 2 : Move the carriage from the capping position to the left.

Step 3 : Remove the screw fixing the flushing box assembly.



1 = Flushing box assembly	2 = Screw (M3x8) fixing the flushing box assembly

Step 4 : Remove the tube from the flushing box assembly.

Step 5 : Replace the flushing box assembly.

Step 6 : Reinstall all parts in the opposite order of the removal procedure.

Step 7 : Adjust the head and flushing box assembly so that they do not come into contact.

4.6. REPLACING THE CR ACTUATOR

4.6.1. Replacing the CR motor assembly

Caution :

The motor is hot after the product has been operated, so be careful not to burn yourself.

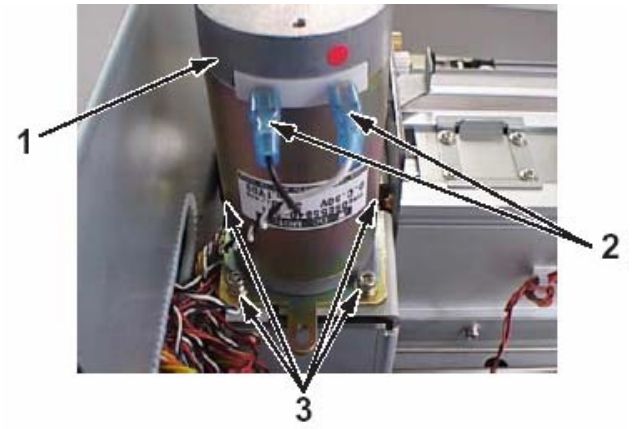
Notes :

- Remove following covers before replacing the CR motor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Media guide F: refer to "Removing media guide F"

Step 1 : Remove the CR motor cable assembly connector from the CR motor assembly.

Step 2 : Remove the 4 hexagon socket head cap screws fixing the CR motor assembly.

Step 3 : Replace the CR motor assembly.



1 = CR motor assembly	2 = Connector
3 = Hexagon socket head cap screws (M3x6)	

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

Step 5 : Adjust the tension of the CR deceleration belt according to "CR deceleration belt tension adjustment".

Notes :

- When installing the CR motor cable assembly connector, install the white cable on the right side as shown in the previous figure.

4.6.2. Replacing the steel belt

Caution :

When replacing the steel belt, be careful not to cut your hands by the belt.

Notes :

- Do not damage the steel belt.
- Remove following covers before replacing the steel belt.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

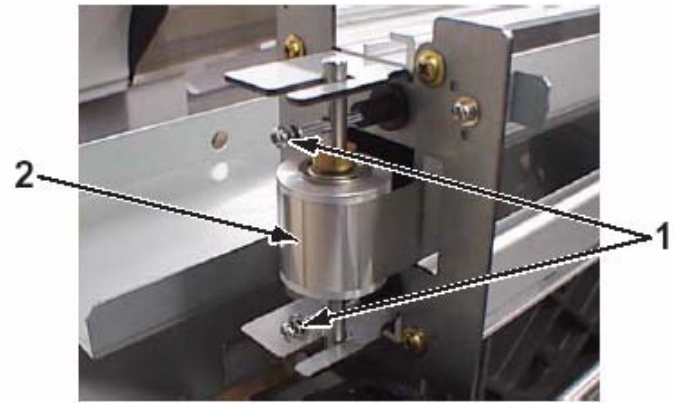
Step 1 : Unlock the head.

Notes :

- Refer to 'Head Lock Menu'

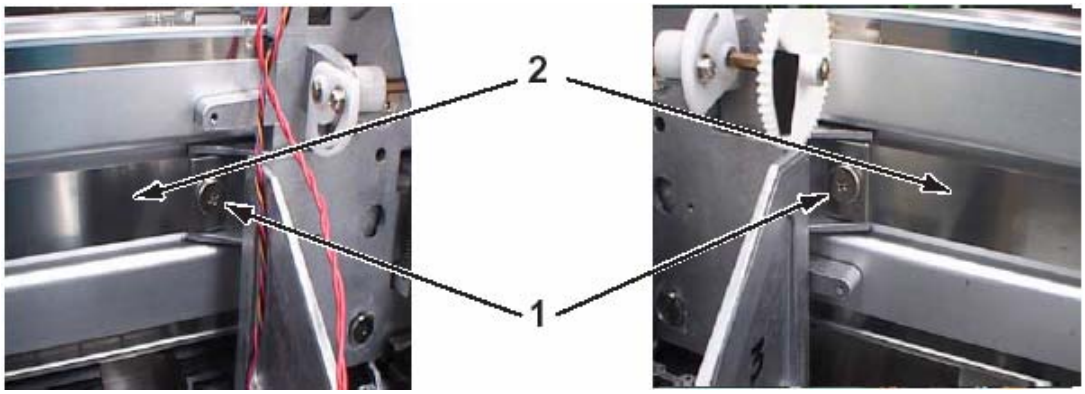
Step 2 : Move the carriage from the capping position to the left.

Step 3 : Rotate the 2 steel belt adjustment screws counterclockwisely to loosen the steel belt.



1 = Steel belt adjustment screws	2 = Steel belt

Step 4 : Remove the 2 screws fixing the steel belt.



1 = Screws fixing the steel belt	2 = Steel belt

Step 5 : Replace the steel belt.

Notes :

- Be careful when handling the steel belt. The steel belt may be cut off when accreting dust to it or creasing it.

Step 6 : Reinstall all parts in the opposite order of the removal procedure.

Step 7 : Perform steel belt tension adjustment according to "Steel belt tension adjustment".

4.6.3. Replacing the SLIDE motor assembly, HD_SLIDE sensor assembly, and slide motor installation board

Caution :

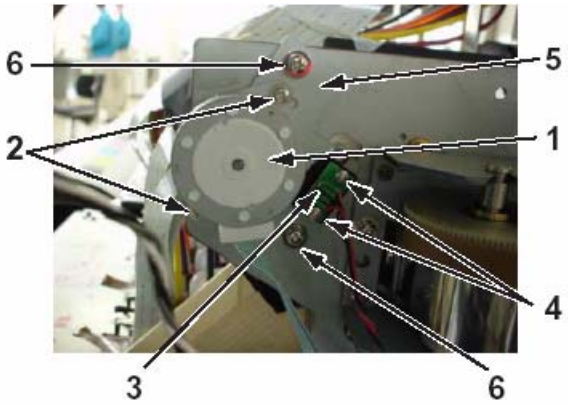
The motor is hot after the product has been operated, so be careful not to burn yourself.

Notes :

- Remove following covers before replacing the SLIDE motor assembly, HD_SLIDE sensor assembly, and slide motor installation board.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

Step 1 : Remove the connectors on the SLIDE motor assembly and HD_SLIDE sensor assembly.

Step 2 : Remove the 2 screws fixing the SLIDE motor assembly.



1 = SLIDE motor assembly	2 = Screws (M3x6) fixing the SLIDE motor assembly
3 = HD_SLIDE sensor assembly	4 = Screws (M2x8) fixing the HD_SLIDE sensor assembly
5 = Slide motor installation board	6 = Screws (M4x6) fixing the slide motor installation board

Step 3 : Replace the SLIDE motor assembly.

Step 4 : Remove the 2 screws fixing the HD_SLIDE sensor assembly.

Step 5 : Replace the HD_SLIDE sensor assembly.

Step 6 : Remove the 2 screws fixing the slide motor installation board.

Step 7 : Replace the slide motor installation board.

Step 8 : Reinstall all parts in the opposite order of the removal procedure.

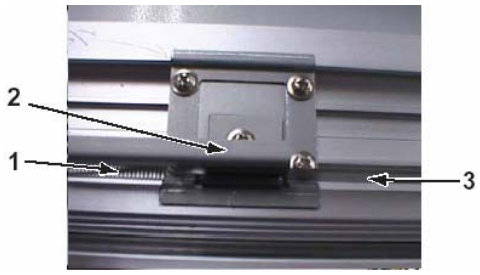
Step 9 : Make sure that the Idler moves smoothly.

4.6.4. Replacing the T fence

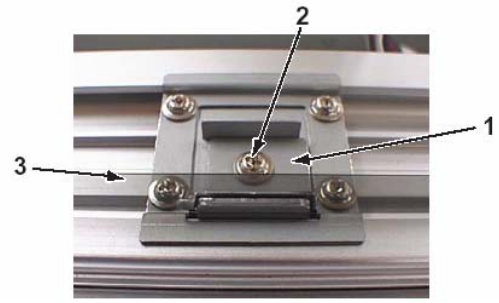
Notes :

- Remove following covers before replacing the T fence.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

Step 1 : Remove the T fence from the T fence spring hook on the side of the L side frame.

Rockhopper II 2 heater	Rockhopper II 4 heater
	
1 = T fence spring	2 = T fence spring hook
3 = T fence	

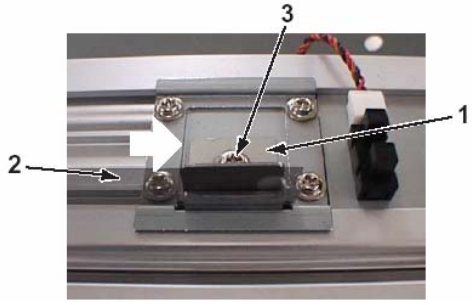
Step 2 : Remove the screw fixing the T fence push plate.



1 = T fence push plate	2 = Screw (M3x6) fixing the T fence push plate
3 = T fence	

Step 3 : Remove the T fence from the hook.

Step 4 : Remove the screw fixing the T fence stationary plate.



1 = T fence stationary plate	2 = T fence
3 = Screw (M3x6) fixing the T fence stationary plate	

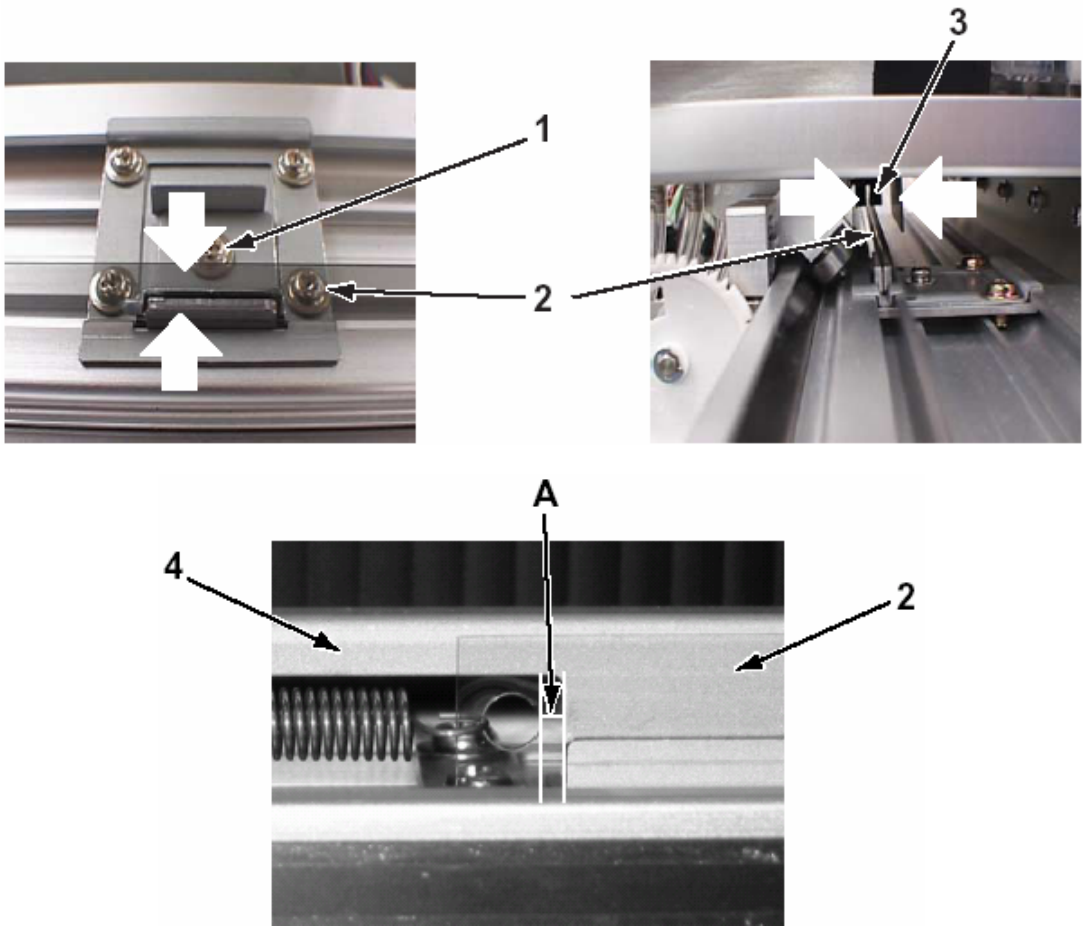
Step 5 : Remove the T fence from the hook.

Step 6 : Pull out the T fence in the direction of the arrow as shown in the previous figure while being careful not to damage the CR_ENC assembly.

Step 7 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- When installing the T fence, pay attention to the following :
  - When there is a film on the T fence, remove the film and install the T fence.
  - Properly install the T fence to the hooks on the T fence stationary plate. Refer to the figure in step 2.
  - The T fence and the hooks on the stationary plate must have a loose fit.
  - When securing the stationary plate with screws, it must be loosened enough so the T fence can be moved.
  - Insert the T fence into the hooks on the T fence push plate and the CR_ENC assembly. Refer to the following figure.
  - Fix the T fence spring hook so that distance A of following diagram is about 1mm.



1 = T fence push plate	2 = T fence
3 = CR_ENC assembly	4 = T fence spring hook

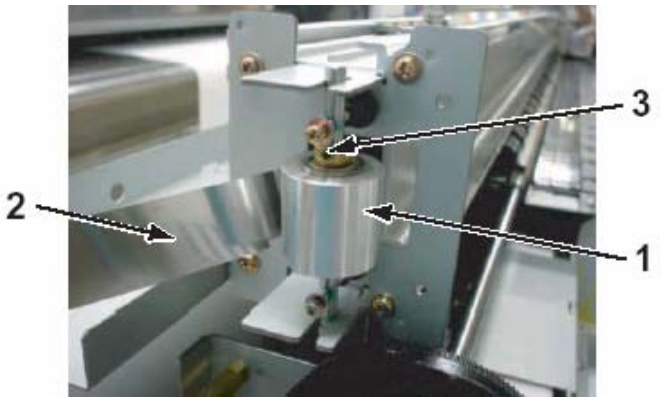
4.6.5. Replacing the CR slave pulley assembly

Notes :

- Remove following covers before replacing the CR slave pulley assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

Step 1 : Follow the instructions in "Replacing the steel belt" to remove the steel belt.

Step 2 : Replace the CR slave pulley assembly.



1 = CR slave pulley assembly	2 = Steel belt
3 = Bearing stopper	

Step 3 : Reinstall all parts in the opposite order of the removal procedure.

Step 4 : Perform steel belt tension adjustment according to "Steel belt tension adjustment".

Notes :

- Be careful when handling the steel belt. The steel belt may be cut off when accreting dust to it or creasing it.
- The driven pulley shaft is installed one way only. Refer to "Service Parts List/Exploded Views/Configuration Diagrams", to install it correctly so that the bearing stoppers are on top.
- After installing the CR slave pulley assembly, move the carriage to the left and right manually to confirm that the steel belt has been set equally in the center of the CR actuator pulley and the CR slave pulley assembly.

4.6.6. Replacing the CR actuator pulley and the CR deceleration belt

Notes :

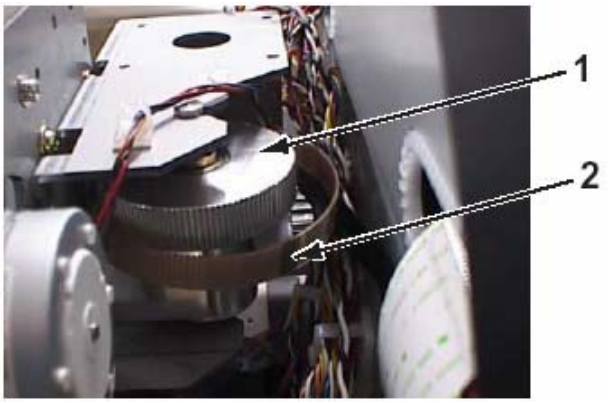
- Remove following covers before replacing the CR slave pulley.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

Step 1 : Follow the instructions in "Replacing the CR motor assembly" to remove the CR motor assembly.

Step 2 : Follow the instructions in "Replacing the steel belt" to remove the steel belt.

Step 3 : Replace the CR actuator pulley.

Step 4 : Replace the CR deceleration belt.



1 = CR slave pulley	2 = CR deceleration belt

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

Step 6 : Adjust the tension of the CR deceleration belt according to "CR deceleration belt tension adjustment".

Notes :

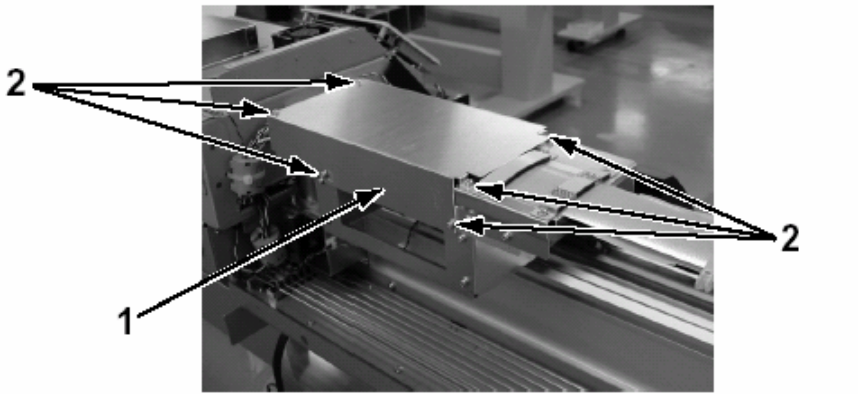
- After installing the CR actuator pulley assembly, move the carriage to the left and right manually to confirm that the steel belt has been set equally in the center of the CR actuator pulley and the CR slave pulley assembly.

4.6.7. Replacing the steel bearer, tube guide, CR tape power cable and ink tube

Notes :

- To replace the board and connect or disconnect the FFC type cable, you should leave the plug disconnected from the power socket for a while. Otherwise, over-current could be generated and damage board.
- Remove following covers before replacing the steel bearer, tube guide, CR tape power cable, and ink tube.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

Step 1 : Remove the 8 screws fixing the CR cover.

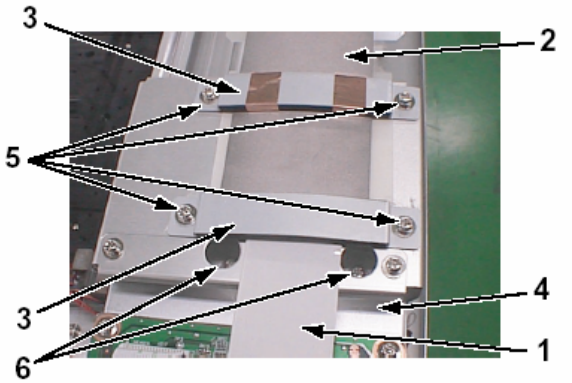


1 = CR cover	2 = Screws (M3x8) fixing the CR cover

Step 2 : Remove the CR tape power cable connector from the CR board assembly and Mainboard assembly.

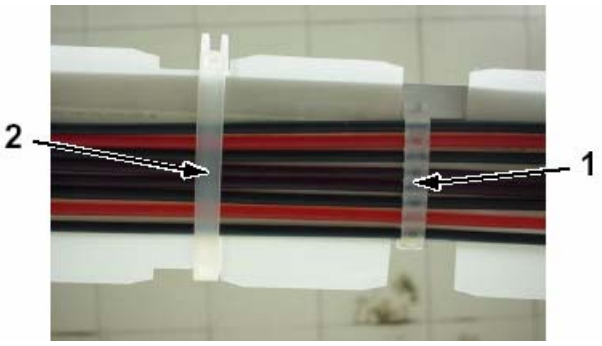
Step 3 : Remove the 2 screws fixing cable push plate.

Step 4 : Remove the 2 screws fixing the tube clamp.



1 = CR tape power cable	2 = Steel bearer
3 = Cable push plate	4 = Screws fixing cable push plate (M3x8)
5 = Screws fixing tube clamp (M3x8)	

Step 5 : Completely remove tube bundles 1 and 2.



1 = Tube bundle	2 = Tube bundle 2

Step 6 : Remove the 4 screws fixing the tube clamp.

Step 7 : Remove the tube clamp.

Step 8 : Remove the coupling screws, O-ring and ink tube from the coupling.

Step 9 : Replace the ink tube.

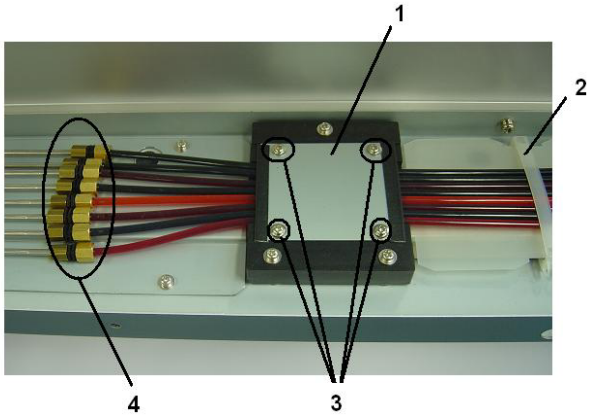
Step 10 : Remove the 2 screws fixing the cable clamp.

Step 11 : Replace the steel bearing.

Step 12 : Replace the tube guide.

Step 13 : Remove the pipe clamp.

Step 14 : Replace the CR tape power cable.



1 = Tube push plate	2 = Cable clamp
2 = Pipe clamp	3 = Coupling, O-ring, coupling screws
4 = Screws fixing tube push plate (M3x8)	4 = Screws fixing tube cramp (M3x20)

Step 15 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- The CR tape power cables must be bundled during installation so that they can not move.
- The edge of the tube push plate must be upside when installed.
- You should soak the O-ring in cleaning liquid once gain before installing it.

4.6.8. Replace the cover R sensor assembly and the cover L sensor assembly

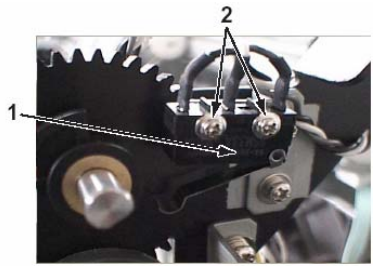
Notes :

- Remove following covers before replacing the cover R sensor assembly and the cover L sensor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

(1) Replacing the cover R sensor assembly

Step 1 : Remove the cover R sensor assembly connector from the Mainboard assembly.

Step 2 : Remove the 2 screws fixing the cover R sensor assembly.



1 = Cover R sensor assembly	2 = Screws (M2x8) fixing the cover R sensor assembly

Step 3 : Replace the cover R sensor assembly.

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

Step 5 : Perform cover sensor adjustment according to "Cover sensor adjustment".

(2) Replacing the cover L sensor assembly

Step 1 : Remove media guide F.

Step 2 : Remove the cover L sensor assembly connector from the cover L cable.

Step 3 : Remove the 2 screws fixing the cover L sensor assembly.

1 = Cover L sensor assembly	2 = Screws (M2x8) fixing the cover L sensor assembly

Step 4 : Replace the cover L sensor assembly.

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

Step 6 : Perform cover sensor adjustment according to "Cover sensor adjustment".

4.7. REPLACING THE CURSOR

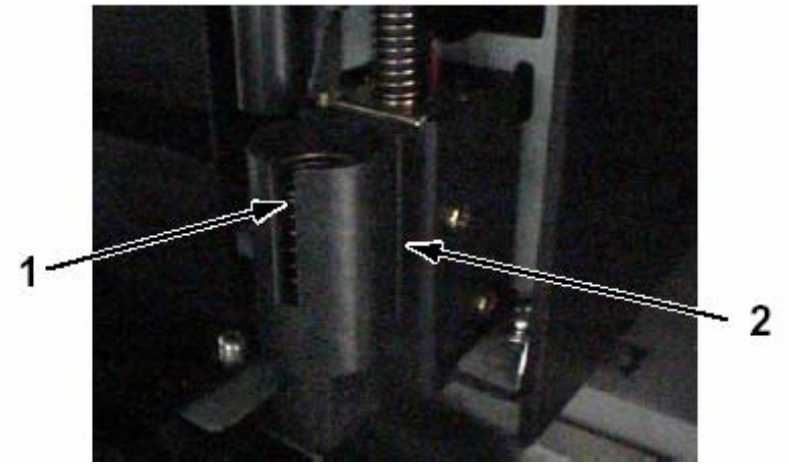
4.7.1. Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly and solenoid spring

(1) Replacing the cutter spring

Step 1 : Open the front cover.

Step 2 : Remove the cutter blade from the cutter holder.

Step 3 : Remove the cutter spring from the cutter holder.



1 = Cutter spring	2 = Cutter holder

Step 4 : Replace the cutter spring.

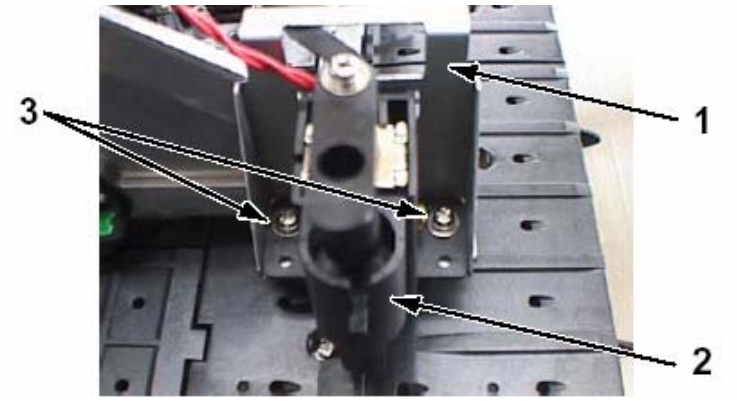
Step 5 : Reinstall all parts in the opposite order of the removal procedure.

(2) Replacing the cutter holder, cutter cap, solenoid assembly and solenoid spring

Notes :

- Remove following covers before replacing the cutter holder, cutter cap, solenoid assembly, and solenoid spring.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Head cover: refer to "Removing the head cover"

Step 1 : Remove the 2 screws fixing the cutter holder and holder support.



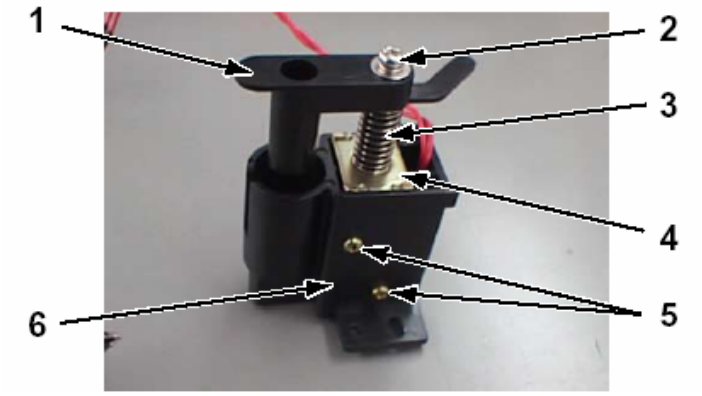
1 = Holder support	2 = Cutter holder
3 = Screws (M3x6) fixing the cutter holder and holder support	

Step 2 : Remove the cutter holder.

Step 3 : Remove the cutter blade and cutter spring from the cutter holder.

Step 4 : Remove the cutter cap and Solenoid spring.

Step 5 : Remove the screw fixing the solenoid assembly to the cutter cap.



1 = Cutter cap	2 = Screws (M3x6) fixing the solenoid assembly to the cutter cap
3 = Solenoid spring	4 = Solenoid assembly
5 = Screws (M2x4) fixing the solenoid assembly to the cutter holder	6 = Cutter holder

Step 6 : Replace the cutter cap and solenoid spring.

Step 7 : Remove the 2 screws fixing the solenoid assembly to the cutter holder.

Step 8 : Use a screwdriver to push the solenoid assembly up from the hole on the cutter holder side.

Step 9 : Replace the solenoid assembly.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Step 11 : Adjust the cutter according to "Cutter adjustment".

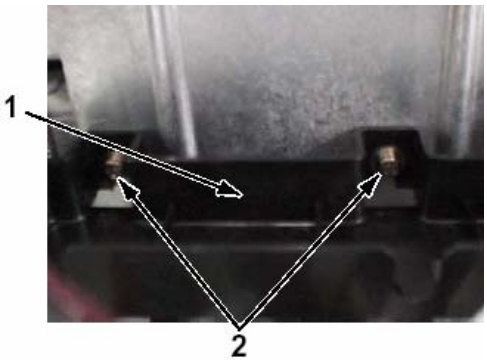
4.7.2. Replacing the print head assembly and head tape power cable

Notes :

- To replace the board and connect or disconnect the FFC type cable, you should leave the plug disconnected from the power socket for a while. Otherwise, over-current could be generated and damage board.
- Remove following covers before replacing the print head assembly and head tape power cable.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Head cover: refer to "Removing the head cover"
- The print head assembly has been pre-adjusted. Do not disassemble it.

Step 1 : Drain the ink from all ink paths according to "Head wash menu".

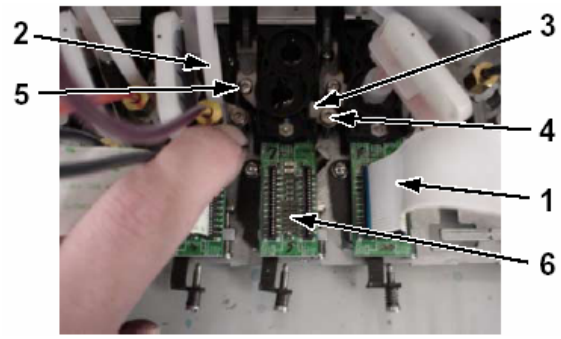
Step 2 : Loosen the 2 screws fixing the damper clamp.



1 = Damper clamp	2 = Screws (M3x6) fixing the damper clamp

Step 3 : Remove the damper clamp.

Step 4 : Remove the head tape power cable.



1 = Head tape power cable	2 = Damper assembly
3 = Head stationary plate / head spacer	4 = Step-bore screw
5 = Screws (M2.6x5) fixing the head stationary plate	6 = Print head assembly

Step 5 : Remove the damper assembly from the print head assembly.

Step 6 : Remove the screw and step-bore screw fixing the head stationary plate.

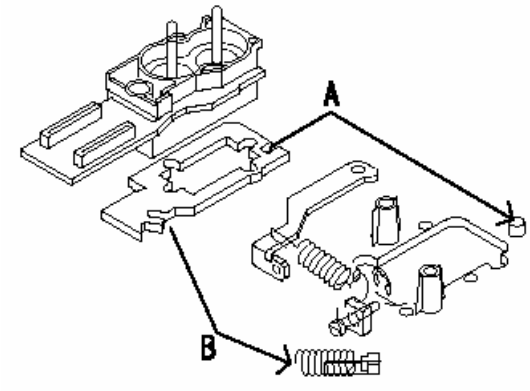
Step 7 : Remove the rotation adjustment spring under the head with small flat-head driver or another tool.

Step 8 : Replace the print head assembly.

Step 9 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- Place the removed damper assembly facing upward and fix with tape or place it in a container to prevent the ink from leaking. Ink adhesion on board may cause faulty print head.
- Align the head tape power cables one by one to each head and paste together with double-faced tape.
- Make sure that the head does not float when installing the head.



- A : Insert the concave portion of the head base in the rear of the cursor convex portion of the cursor.
- B : Insert the rotation adjustment spring into the convex portion of the head base on the right front.

Step 10 : Perform head precision adjustment according to "Head precision adjustment".

4.7.3. Replacing the H ink tube, tube branch and damper assembly

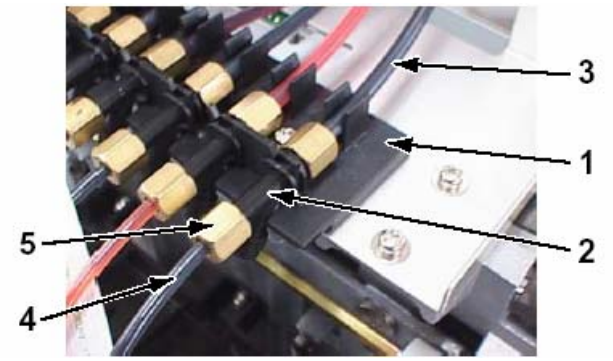
Notes :

- Remove following covers before replacing the H ink tube, tube branch, and damper assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Head cover: refer to "Removing the head cover"

Step 1 : Drain the ink from all ink paths according to "Head wash menu".

Step 2 : Follow step 1 in "Replacing the print head assembly and head tape power cable" to remove the damper clamp.

Step 3 : Remove the ink tube and tube branch from the branch fixing material.

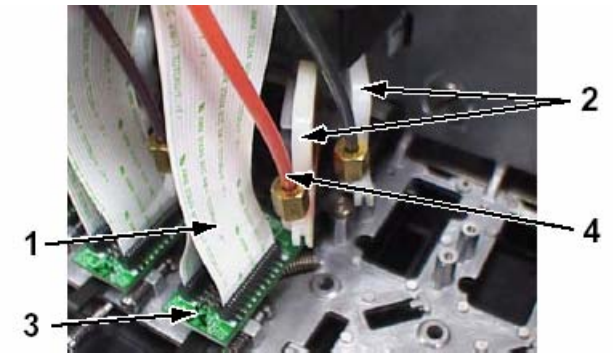


1 = Branch fixing material	2 = Tube branch
3 = Ink tube	4 = H ink tube
5 = Coupling screw, O-ring	

Step 4 : Remove the coupling screw and O-ring on the ink tube and the H ink tube sides from the tube branch.

Step 5 : Replace the tube branch.

Step 6 : Remove the damper assembly from the print head assembly.



1 = Head tape power cable	2 = Damper assembly
3 = Print head assembly	4 = H ink tube, O-ring

Step 7 : Remove the H ink tube, coupling screw and O-ring from the damper assembly.

Step 8 : Replace the damper assembly.

Step 9 : Replace the H ink tube and O-ring.

Notes :

- Please soak the O-ring in cleaning liquid before installation.

Step 10 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

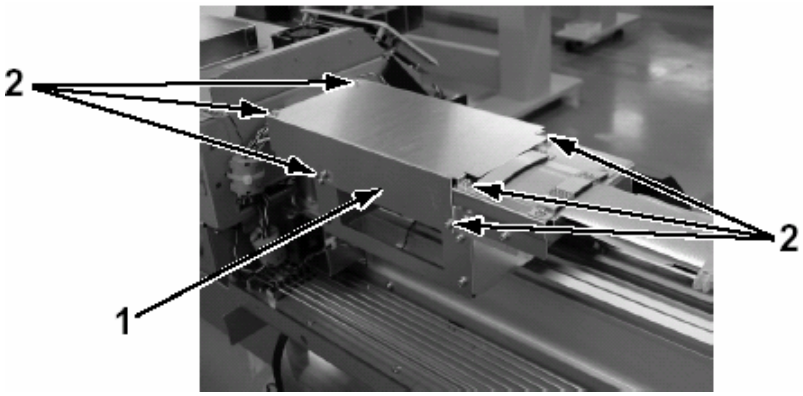
- When tightening coupling screws, finger-tighten those. If using tools, it may result in cracking where the screws fix damper and fail to fill the ink.
- Do not grasp the film area of the damper strongly. Doing so may cause faulty damper and print failure.

4.7.4. Replacing the CR board assembly

Notes :

- To replace the board and connect or disconnect the FFC type cable, you should leave the plug disconnected from the power socket for a while. Otherwise, over-current could be generated and damage the board
- Remove following covers before replacing the CR board assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

Step 1 : Remove the 8 screws fixing the CR cover.



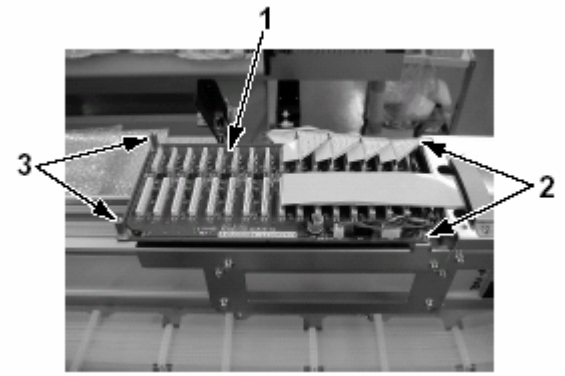
1 = CR cover	2 = Screws (M3x8) fixing the CR cover

Step 2 : Remove following connectors from the CR board.

N°	Connector N°	# of pins	Colour	Connected to	Remarks
1	J201	30	White or Black	Mainboard	Lock type or Plug-in
2	J202	30	White or Black	Mainboard	Lock type or Plug-in
3	J203	30	White or Black	Mainboard	Lock type or Plug-in
4	J204	30	White or Black	Mainboard	Lock type or Plug-in
5	J205	30	White or Black	Mainboard	Lock type or Plug-in
6	J206	30	White or Black	Mainboard	Lock type or Plug-in
7	J207	30	White or Black	Mainboard	Lock type or Plug-in
8	J208	30	White or Black	Mainboard	Lock type or Plug-in
9	J209	30	White or Black	Mainboard	Lock type or Plug-in
10	J210	30	White or Black	Mainboard	Lock type or Plug-in
11	J211	30	White or Black	Mainboard	Lock type or Plug-in
12	J212	30	White or Black	Mainboard	Lock type or Plug-in
13	J213	30	White or Black	Mainboard	Lock type or Plug-in
14	J214	30	White or Black	Mainboard	Lock type or Plug-in
15	J215	30	White or Black	Mainboard	Lock type or Plug-in
16	J216	30	White or Black	Mainboard	Lock type or Plug-in
17	J217	21	White or Black	I160B head	
18	J218	21	White or Black	I160B head	
19	J219	21	White or Black	I160B head	
20	J220	21	White or Black	I160B head	
21	J221	21	White or Black	I160B head	
22	J222	21	White or Black	I160B head	
23	J223	21	White or Black	I160B head	
24	J224	21	White or Black	I160B head	
25	J225	21	White or Black	I160B head	
26	J226	21	White or Black	I160B head	
27	J227	21	White or Black	I160B head	
28	J228	21	White or Black	I160B head	
29	J229	21	White or Black	I160B head	
30	J230	21	White or Black	I160B head	
31	J231	21	White or Black	I160B head	
32	J232	21	White or Black	I160B head	
33	J233	5	White	CR_ENC	
34	J234	5	Black	P_EDGE sensor	
35	J235	2	White	Solenoid	

Step 3 : Remove the 2 screws and 2 hexagon spacers fixing the CR board assembly.

Step 4 : Replace the CR board assembly.



1 = CR board assembly	2 = Screws fixing the CR board assembly (M3x6)
3 = Hexagon spacers fixing the CR boar	

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

4.7.5. Replacing the CR_ENC assembly

Notes :

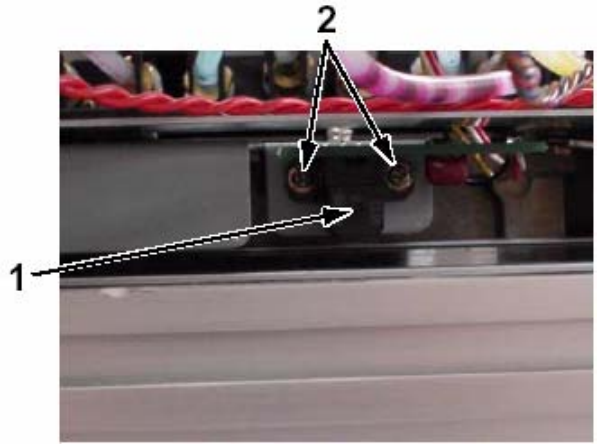
- Remove following cover before replacing the CR_ENC assembly.
  - Side cover L: refer to "Removing side cover L"

Step 1 : Follow step 1 in "Replacing the flushing box assembly" to slide the CR cursor to the left.

Step 2 : Remove the CR_ENC assembly connector from the CR board assembly.

Step 3 : Remove the T fence from the T fence spring, and then from the CR_ENC assembly.

Step 4 : Remove the 2 screws fixing the CR_ENC assembly.



1 = CR_ENC assembly	2 = Screws (M2x12) fixing the CR_ENC assembly

Step 5 : Replace the CR_ENC assembly.

Step 6 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- When removing the T fence from the CR_ENC assembly, be careful not to damage the T fence.

4.7.6. Replacing the P_EDGE sensor assembly

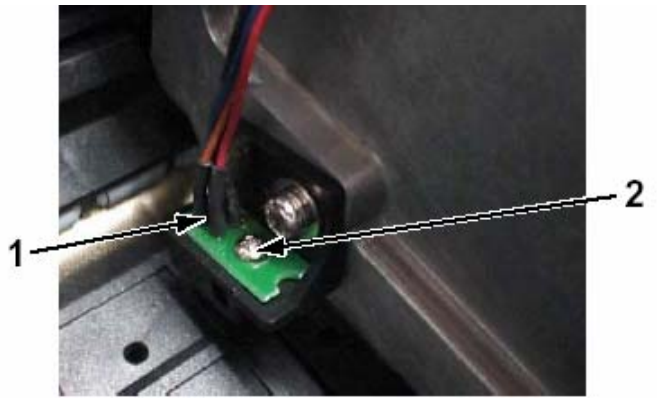
Notes :

- Remove following covers before replacing the P_EDGE sensor Assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Head cover: refer to "Removing the head cover"

Step 1 : Remove the P_EDGE sensor assembly connector from the CR board assembly.

Step 2 : Remove the screw fixing the P_EDGE sensor assembly.

Step 3 : Replace the P_EDGE sensor assembly.



1 = P_EDGE sensor assembly	2 = Screw (M2x12) fixing the P_EDGE sensor assembly

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

Step 5 : Perform media sensor sensitivity adjustment according to "Media sensor sensitivity adjustment".

4.7.7 Replacing black tape on platform

This black tape optimizes the media detection.

A damaged or faded black tape could cause the printer not to recognize the edge of the media during loading / detection of media. This is the result of an insufficient reflection difference between the media and the print platform.

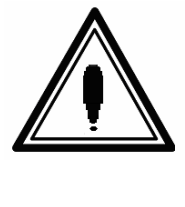
Check if the black tape is not damaged or faded. To check the reflection, please check the media sensor when no media is loaded.

Notes :

- The adjustment value is as follows.
  - LOW level (without media) A/D value
    - In hexadecimal number : 30 to 0 (H)
    - In decimal number : 48 to 0 (H)

In case of a damaged or faded black tape, you have to stick a new black tape onto the print platform. This black tape can be ordered with Mutoh Europe's order entry department.

To stick the black tape onto the print platform, please follow the instructions mentioned below.



Important :

Before replacing parts, be sure to perform the following operations:

- **Turn the machine power OFF.**
- **Remove the product's electrical plug from the socket. Otherwise, you may suffer electric shock or the machine's electric circuits may be damaged.**
- **Disconnect all cables from the machine. Not doing so could cause damage to the printer.**

Step 1: Remove the damaged or faded black tape.

Step 2: Degrease the print platform.

Notes :

- Make sure the print platform is cleaned properly. Dust, glue and other parts must be removed.

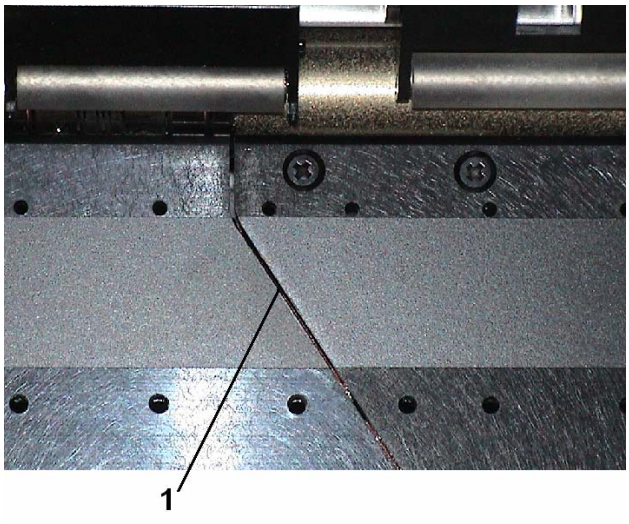
Step 3: Stick the new black tape onto the print platform, between the middle row and rear row of vacuum holes.

1 = vacuum holes	2 = black tape

Notes :

- Make sure that the black tape connects properly.
- Please make sure that there are no air bubbles under the black tape. Air bubbles below the black tape could cause the black tape to come loose.

Step 4: There are grooves between the different print platform plates. Cut the black strip at this place equal with this groove.



1 = groove

Important :

- **Make sure not to cut the heater strip below the print platform. Doing so will damage the printer.**

4.7.8. Replacing the CR cursor assembly

Notes :

- Remove following covers before replacing the CR cursor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Head cover: refer to "Removing the head cover"

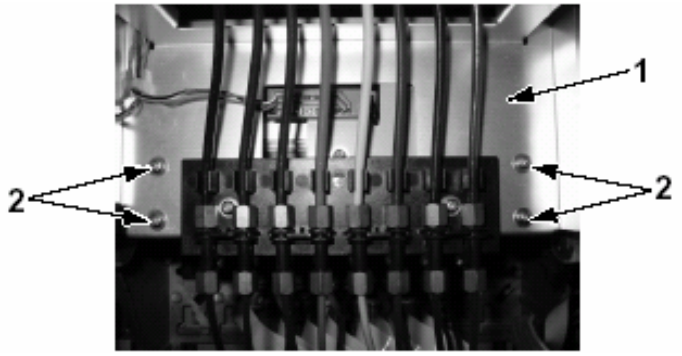
Step 1 : Follow the instructions in "Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly, and solenoid spring" to "Replacing the P_EDGE sensor assembly " to remove the parts in cursor components.

Step 2 : Slide the CR cursor assembly to the opposite side of the home position.

Step 3 : Follow the instructions in "Replacing the steel belt" to remove the steel belt from the CR cursor.

Step 4 : Remove the 4 screws fixing the CR board installation board.

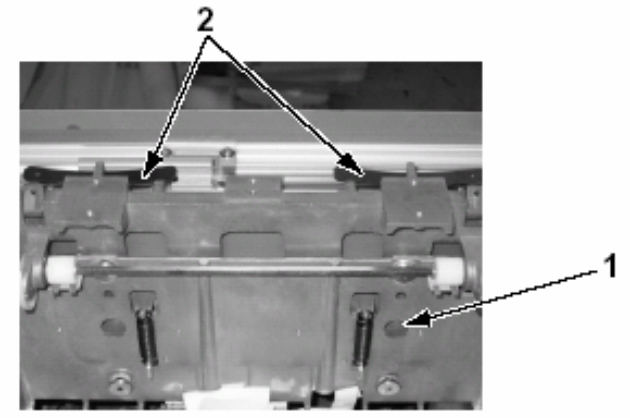
Step 5 : Remove the CR board installation board.



1 = CR board installation board	2 = Screws (M3x8) fixing the CR board installation board

Step 6 : Remove the T fence.

Step 7 : Remove the CR blade spring.



1 = CR cursor assembly	2 = CR blade spring

Step 8 : Replace CR cursor assembly.

Step 9 : Reinstall all parts in the opposite order of the removal procedure.

Step 10 : Perform head height adjustment according to "Head height adjustment".

4.7.9. Replacing the cursor roller assembly

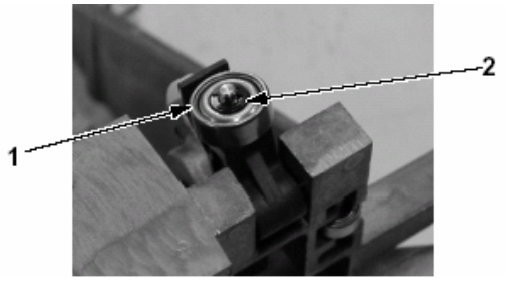
Notes :

- Remove following cover before replacing the Cursor roller assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Head cover: refer to "Removing the head cover"

4.7.9.1. Replacing the cursor roller assembly (upper 2 cursor rollers)

Step 1 : Follow the instructions in "Replacing the CR cursor assembly " to remove the CR cursor assembly.

Step 2 : Remove the E ring fixing the cursor roller assembly.



1 = CR cursor assembly (KY-80040)	2 = E ring fixing the cursor roller assembly.

Step 3 : Replace the cursor roller assembly.

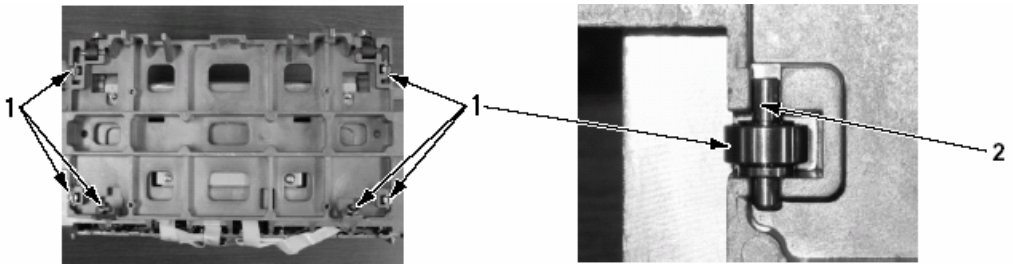
Step 4 : Reinstall all parts in the opposite order of the removal procedure.

Step 5 : Perform head height adjustment according to "Head height adjustment".

4.7.9.2. A. Replacing the cursor roller assembly (6 high-load bearings) : Large bearing type

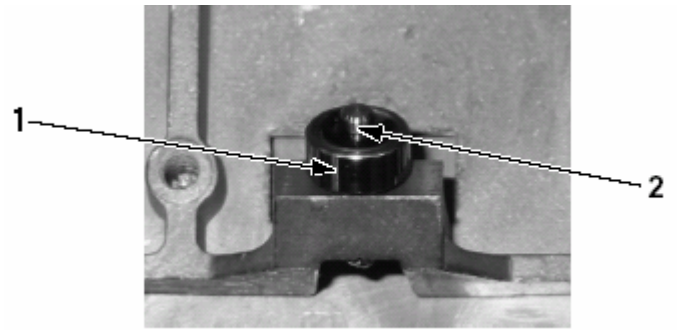
Step 1 : Follow the instructions in "Replacing the CR cursor assembly " to remove the CR cursor assembly.

Step 2 : Remove the side cursor roller assemblies and B cursor axises together with flat-head driver or another tool.



1 = CR cursor assembly	2 = B cursor axis

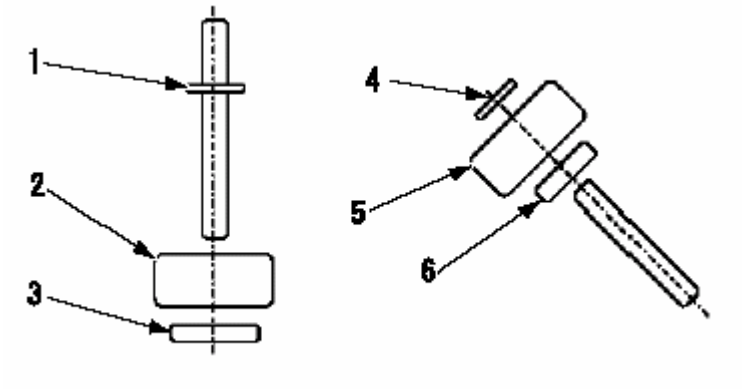
Step 3 : Remove the E ring fixing the cursor roller assembly of downside.



1 = CR cursor assembly	2 = E ring fixing the cursor roller assembly.

Step 4 : Replace the cursor roller assembly.

Step 5 : Install the spacers and the other parts as shown in the following figure.

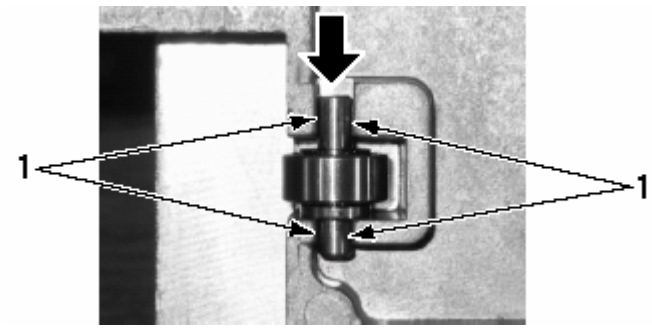


1 = E ring fixing the side cursor roller assy	2 = High-load bearing of the side cursor roller assy
3 = Brass spacer of the side cursor roller assy	4 = E ring of the cursor roller assy
5 = High-load bearing of the cursor roller assy of downside	6 = Brass spacer of the cursor roller assy

Step 6 : Apply the screw lock to the cursor axis, and install the cursor roller assembly with the axis at the lower position.

Notes :

- Be sure that the screw lock does not contaminate the cursor roller or the spacer.



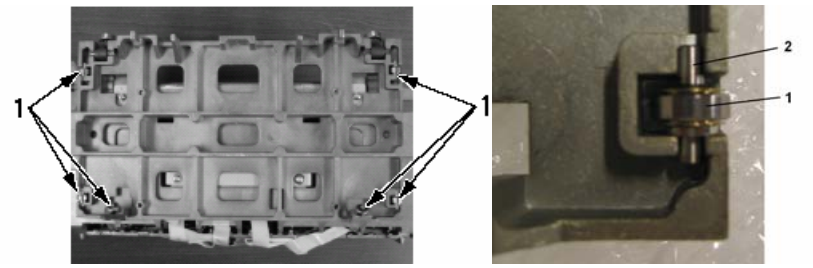
1 = Applying position of the screw lock

Step 7 : Perform head height adjustment according to "Head height adjustment".

4.7.9.3. B. Replacing the cursor roller assembly (6 high-load bearings) : open bearing type

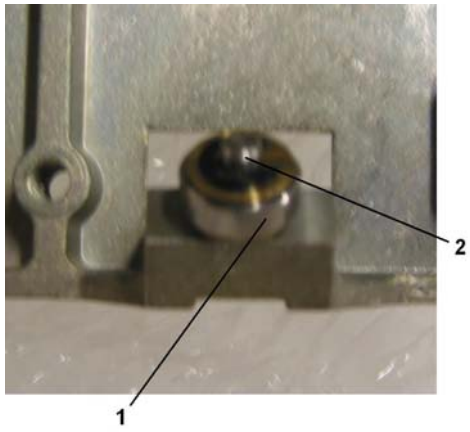
Step 1 : Follow the instructions in "Replacing the CR cursor assembly " to remove the CR cursor assembly.

Step 2 : Remove the side cursor roller assemblies and B cursor axises together with flat-head driver or another tool.



1 = CR cursor assembly	2 = B cursor axis

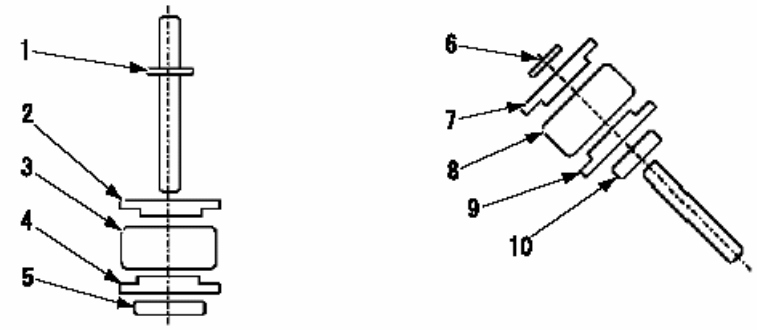
Step 3 : Remove the E ring fixing the cursor roller assembly (MY-43272) of downside.



1 = CR cursor assembly	2 = E ring fixing the cursor roller assembly.

Step 4 : Replace the cursor roller assembly.

Step 5 : Install the spacers and the other parts as shown in the following figure.

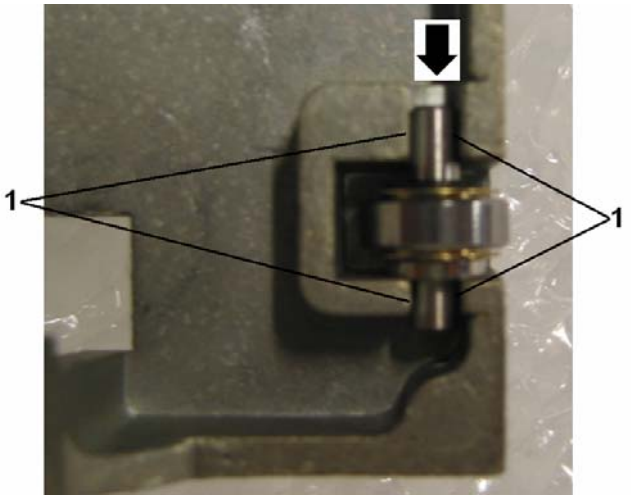


1 = E ring fixing the side cursor roller assy	2 = Spacer of the side cursor roller assy
3 = High-load bearing of the side cursor roller assy	4 = Spacer of the side cursor roller assy
5 = Brass spacer of the side cursor roller assy	6 = E ring of the cursor roller assy
7 = Spacer of the cursor roller assy	8 = High-load bearing of the cursor roller assy of downside
9 = Spacer of the cursor roller assy	10 = Brass spacer of the cursor roller assy

Step 6 : Apply the screw lock to the cursor axis, and install the cursor roller assembly with the axis at the lower position.

Notes :

- Be sure that the screw lock does not contaminate the cursor roller or the spacer.



1 = Applying position of the screw lock

Step 7 : Perform head height adjustment according to "Head height adjustment".

4.8. REPLACING THE MAINTENANCE AREA

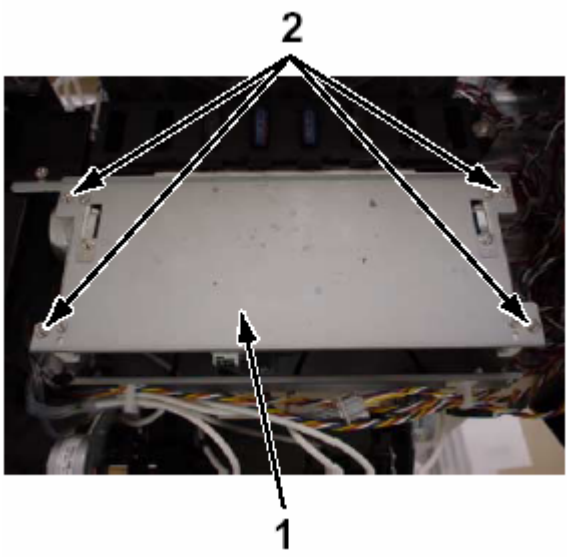
4.8.1. Replacing the maintenance assembly

Notes :

- When replacing the parts inside the maintenance assembly, be sure to perform following operation to clear the counter.
  - "High ink initialization" or " Cleaning initialization": refer to "Counter Display Menu"
- Remove following covers before replacing the parts inside the maintenance assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"

Step 1 : Follow step 1 in "Replacing the flushing box assembly" to move the CR cursor to the left.

Step 2 : Remove the 4 screws fixing the side plate T.



1 = Side plate T	2 = Screws (M3x6) fixing the side plate T

Step 3 : Remove the side plate T.

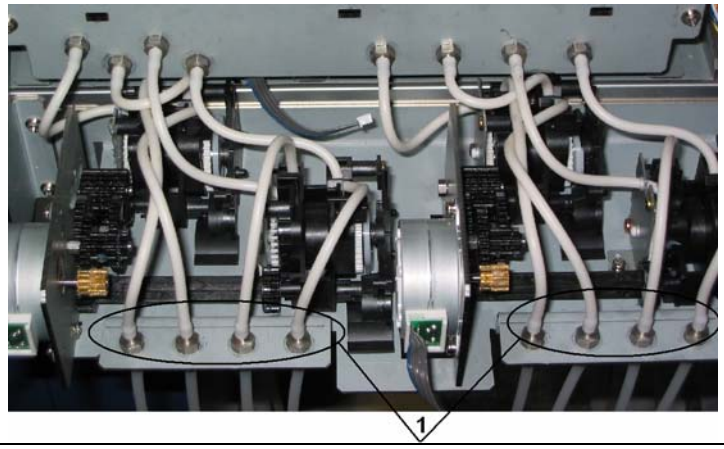
Step 4 : Remove the screw fixing the waste fluid receptacle.

Step 5 : Remove the waste fluid receptacle.

Step 6 : Remove the screw fixing the flushing box installation board.

Step 7 : Remove the flushing box installation board.

Step 8 : Remove the connector and tube from the maintenance assembly.

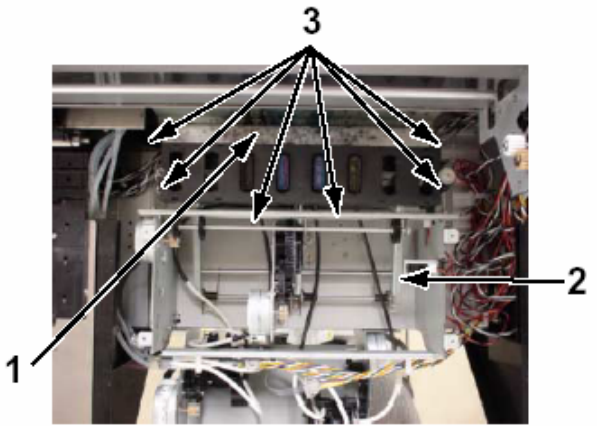


1 = tube connections

Notes :

- There is some remaining ink in the tubes. Be careful that the ink is not spilled from the tube onto the printer or items close to the printer.

Step 9 : Remove the 6 screws fixing the maintenance assembly.



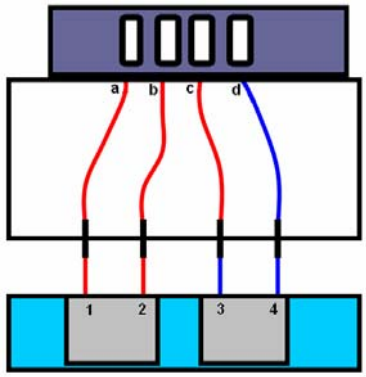
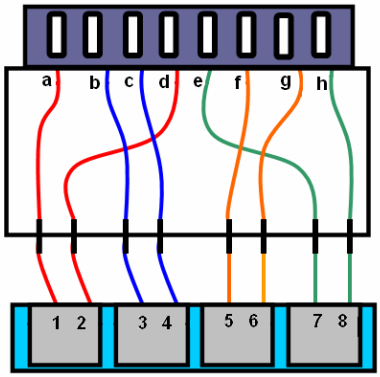
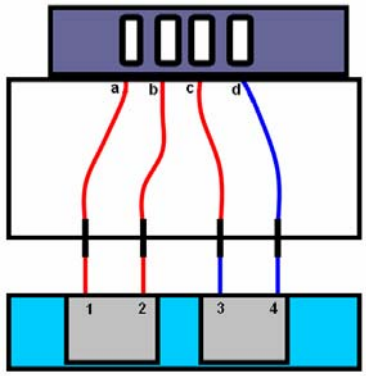
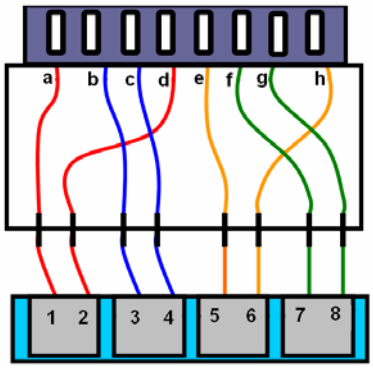
1 = Waste fluid receptacle	2 = Maintenance assembly
3 = Screws (M3x8) fixing the maintenance assembly	

Step 10 : Replace the maintenance assembly.

Notes :

- Secure the maintenance assembly so that it abuts against the rear right portion.
- If the cap tube has not been cut, cut it to the length below, measured from the end of the tube: Numbers in brackets ( ) are the cap numbers from left to right as viewed from the front of the main body. For 50, 64 inch model: (1) 50mm, (2) 0mm, (3) 40mm, (4) 0mm For 87 inch model: (1) 90mm, (2) 50mm, (3) 40mm, (4) 70mm, (5) 0mm, (6) 30mm, (7) 30mm, (8) 0mm
- The connection sequence for the tubes is as follows: Numbers in brackets ( ) are the cap numbers from left to right as viewed from the front of the main body.

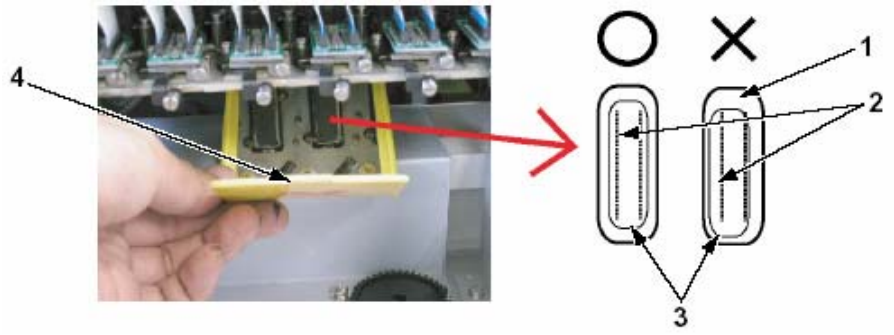
- o 50 or 64 inch model: Cap (a) and Pump (1), Cap (b) and Pump (3), Cap (c) and Pump (2), Cap (d) and Pump (4)
- o 87 inch model 2 heater: Cap (a) and Pump (1), Cap (b) and Pump (3), Cap (c) and Pump (4), Cap (d) and Pump (2), Cap (e) and Pump (7), Cap (f) and Pump (5), Cap (g) and Pump (6), Cap (h) and Pump (8)
- o 87 inch model 4 heater: Cap (a) and Pump (1), Cap (b) and Pump (3), Cap (c) and Pump (4), Cap (d) and Pump (2), Cap (e) and Pump (5), Cap (f) and Pump (7), Cap (g) and Pump (8), Cap (h) and Pump (6)

50” or 64” Rockhopper II 2 heater	87” Rockhopper II 2 heater
	
50” or 64” Rockhopper II 4 heater	**87” Rockhopper II 4 heater**
	

Step 11 : Move the cursor to the opposite side of the origin.

Step 12 : Cap once.

Step 13 : Use a mirror to check that the cap does not impinge on the nozzle.



1 = Print head (nozzle face)	2 = Nozzle
3 = Cap trace	4 = Mirror

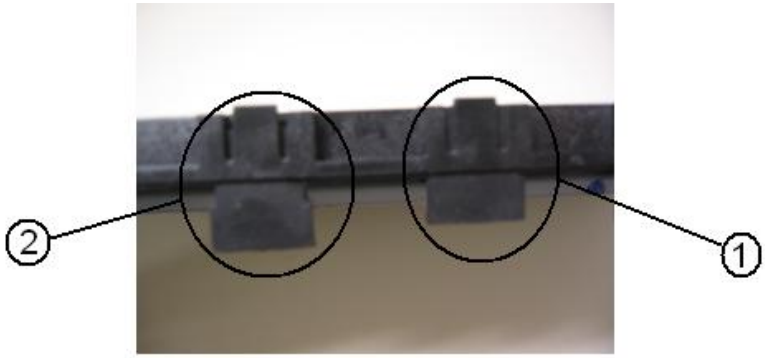
Step 14 : Reinstall all parts in the opposite order of the removal procedure.

4.8.2. Replacing the wiper and wiperarm

4.8.2.1 Installing the new wipers in the wiperarm.

Please follow the procedure mentioned below.

Step 1 : Click the new wipers in the new wiperarm on the positions and manor shown in the pictures.

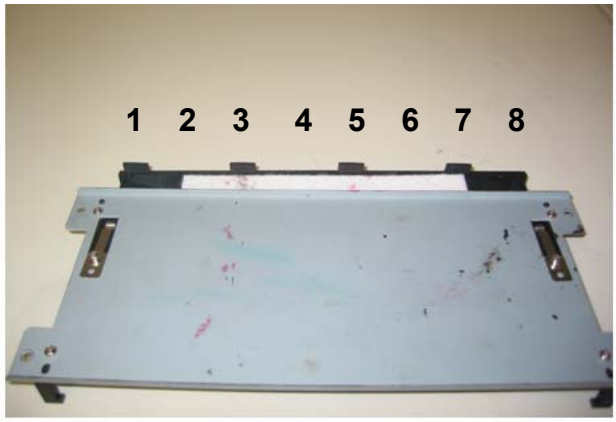


No.	Part
1	Well positioned wiper
2	Malpositioned wiper

For Rockhopper II 50” and 64”

Position 3, 4, 5, 6

For Rockhopper II 87”



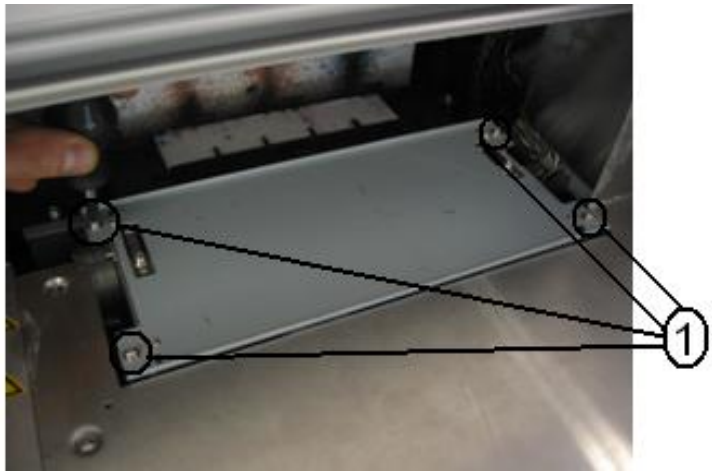
Position 1, 3, 5, 7

4.8.2.2 Installing the wiperarm

Step 1 : Power ON the printer and go to the “WiperClean-Menu”. This will cause the unlocking of the carriage.

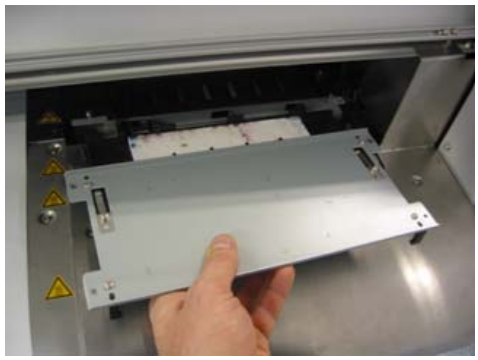
```
* WiperClean *

  Changed wiper?
                → ENTER
```

Step 2 : Push the carriage to the left side of the machine so you can remove the four screws of the wiper assembly.



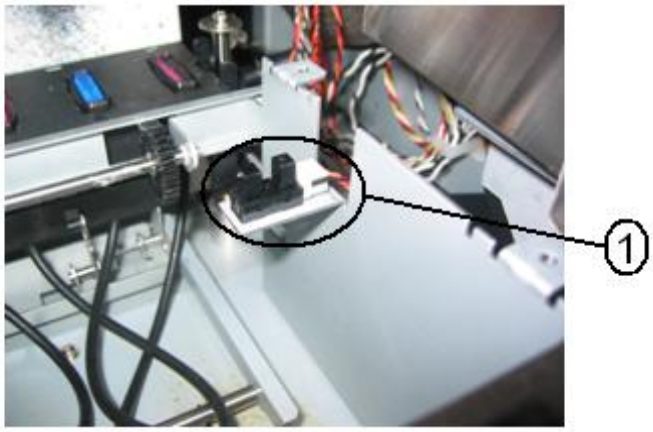
No.	Part
1	Screws

Step 3 : Remove the wiper assembly



Notes :

- Be careful removing the wiper assembly, so you don't break the sensor located close to the wiper.



No.	Part
1	Sensor

Step 4 : Remove the wiperarm and reinstall the new one.

No.	Part
1	Wiperarm assembly
2	T plate

Step 5 : To reinstall the wiper assembly, please reverse the removal procedure.

Step 6 : After complete reinstallation, clean the wipers using Isopropanol.

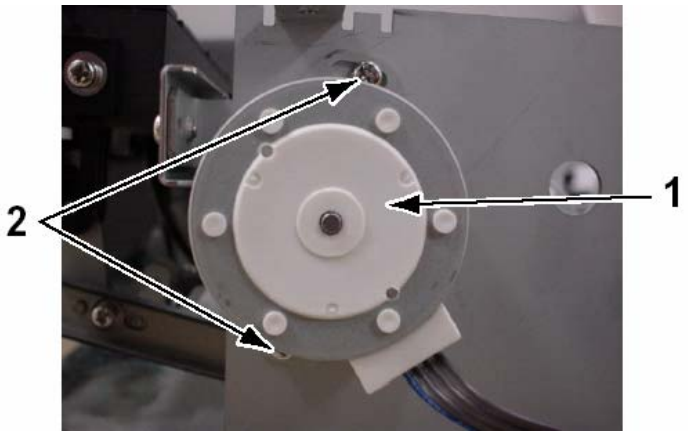
4.8.3. Replacing the SLIDE motor assembly (wiper arm)

Caution :

The motor is hot after the product has been operated, so be careful not to burn yourself.

Step 1 : Follow the instructions in "Replacing the maintenance assembly" to remove the maintenance assembly.

Step 2 : Remove the 2 screws fixing the SLIDE motor assembly.



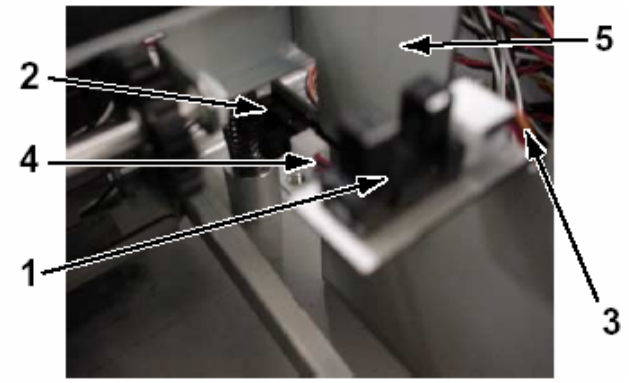
1 = SLIDE motor assembly	2 = Screws (M3x6) fixing the SLIDE motor assembly

Step 3 : Replace the SLIDE motor assembly.

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

4.8.4. Replacing the transmission photosensor (wiper home position and maintenance home position)

Step 1 : Remove the transmission photosensor from the side plate R.



1 = Transmission photosensor (wiper origin side)	2 = Transmission photosensor (maintenance origin side)
3 = Wiper origin cable assembly	4 = Maintenance origin cable assembly
5 = Side plate R	

Step 2 : Remove each origin cable assembly from the transmission photosensor.

Step 3 : Remove the transmission photosensor.

Step 4 : Apply the screw lock to the tab portions of the transmission photosensors to be installed.

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- When installing the origin cable assembly onto the transmission photosensor, be careful to not confuse the connectors.
  - Wiper origin cable assembly (black): front
  - Maintenance origin cable assembly (white): rear

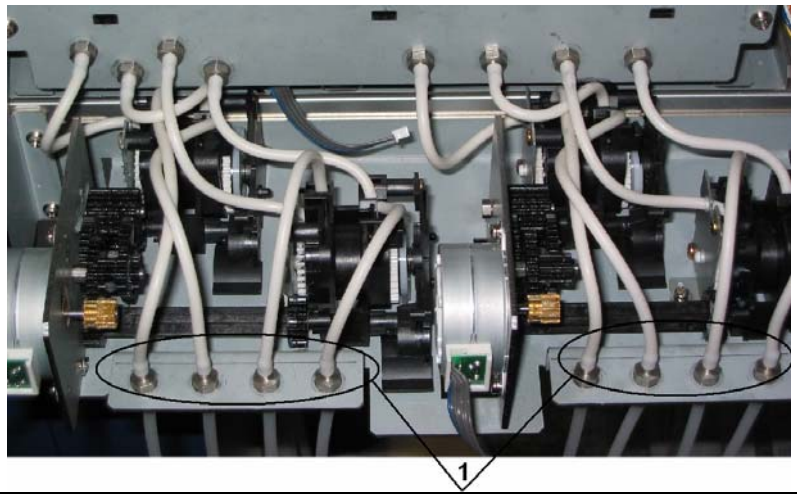
4.9. REPLACING THE PUMP AREA

4.9.1. Replacing the pump assembly

Notes :

- Remove following covers before replacing the parts in the PF motor assembly.
  - Side cover R: refer to "Removing side cover R"
  - Side cover L: refer to "Removing side cover L"
  - Front cover: refer to "Removing the front cover"
  - Carriage cover: refer to "Removing the carriage cover"
  - Y rail cover: refer to "Removing the Y rail cover"
  - Maintenance cover: refer to "Removing the maintenance cover"

Step 1 : Remove the connector and tube from the pump assembly.

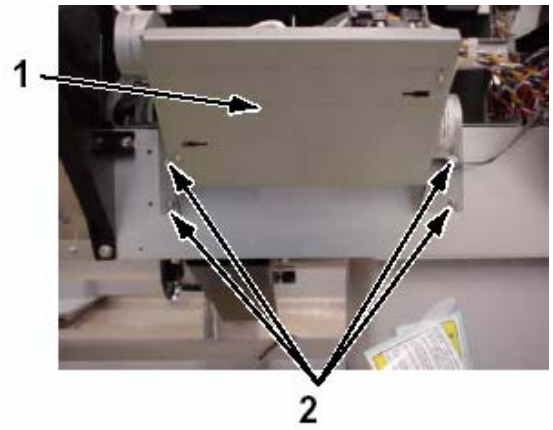
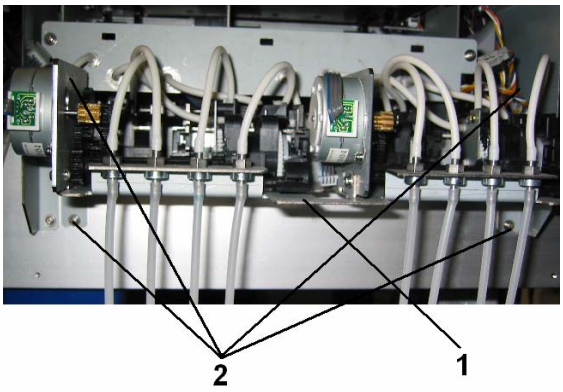


1 = tube connections

Notes :

- There is some remaining ink in the tubes. Be careful that the ink is not spilled from the tube onto the printer or items close to the printer.

Step 2 : Remove the 4 screws fixing the pump assembly.

Rockhopper II 2 heater	Rockhopper II 2 heater
	
1 = Pump assembly	2 = Screws (M3x8) fixing the pump assembly

Step 3 : Replace the pump assembly.

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

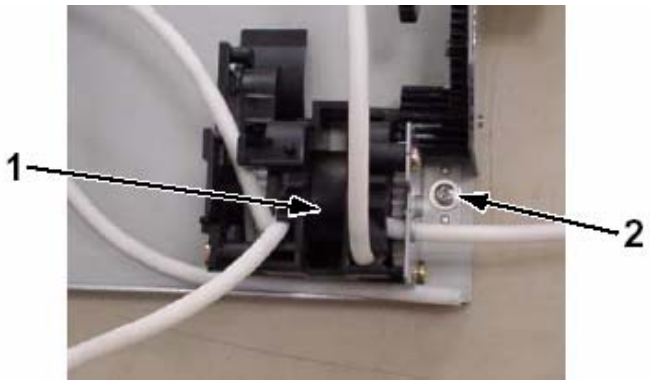
Notes :

- Follow the instructions in "Pump tubing layout for pump assembly" to connect the tube.

4.9.2. Replacing the pump assembly

Step 1 : Follow the instructions in "Replacing the pump assembly " to remove the pump assembly.

Step 2 : Remove the screw fixing the pump assembly.



1 = Pump assembly	2 = Screws (M3x6) fixing the pump assembly

Step 3 : Replace the pump assembly.

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- Follow the instructions in "Pump tubing layout for pump assembly" to connect the tube.

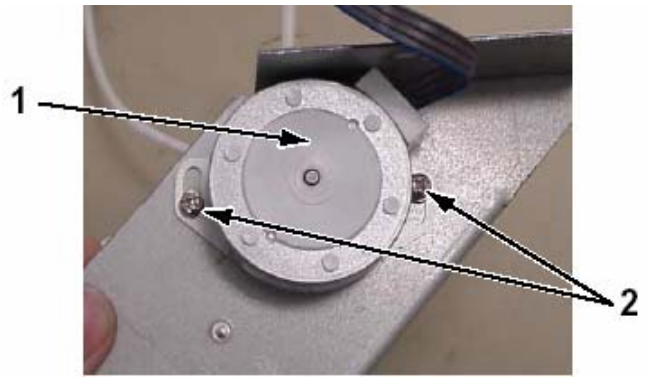
4.9.3. Replacing the pump motor assembly

Caution :

The motor is hot after the product has been operated, so be careful not to burn yourself.

Step 1 : Follow the instructions in "Replacing the pump assembly " to remove the pump assembly.

Step 2 : Remove the 2 screws fixing the pump motor assembly.



1 = Pump motor assembly	2 = Screws (M3x6) fixing the pump motor assembly

Step 3 : Replace the pump motor assembly.

Step 4 : Reinstall all parts in the opposite order of the removal procedure.

4.10. REPLACING THE CARTRIDGE AREA

4.10.1. Replacing the I/H (ink holder) assembly

There are 8 I/H assembly 's installed in this printer. Following procedure is for the removal of 1 I/H assembly.

Notes :

- Remove following covers before replacing the parts in the I/H assembly.
  - I/H cover: refer to "Removing the I/H cover"
  - Side cover R: refer to "Removing side cover R"
  - Panel unit assembly: refer to "Removing the panel unit assembly"

(1) Removing the I/H assembly

Step 1 : Perform the ink discharge operation to discharge the ink from the inside of all ink paths.

Notes :

- For ink draining procedure, refer to "Head wash menu".

Step 2 : Remove the following connectors from the JUNCTION board assembly.
- Ink sensor assembly connectors (8)
- SC cable assembly connectors (8)

Notes :

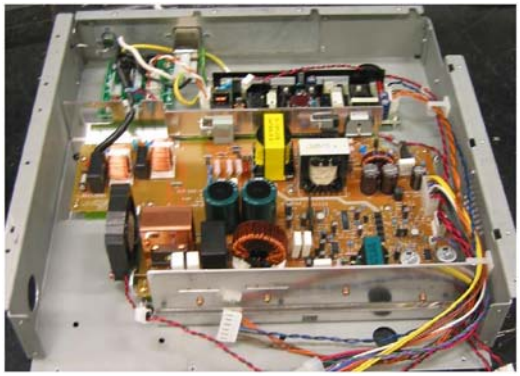
- For more details of the JUNCTION board assembly connector, refer to "Table Connectors connected to the JUNCTION board assembly" in "Replacing the JUNCTION board assembly".

Step 3 : Remove the sensor assembly harnesses removed in step 2 from their clamps.

Step 4 : Pull the harnesses out of the grommets on the board base fixing plate.

Step 5 : Follow the step 1 to 3 in "Replacing the power source board assembly" to remove the Mainboard base.

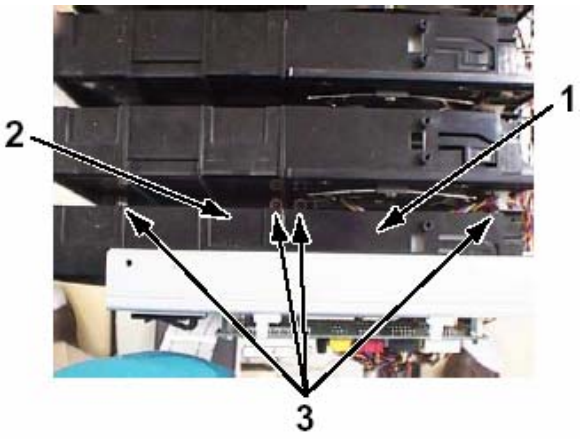
Step 6 : Remove the 3 screws fixing the P/S board installation board.



Step 7 : Remove the P/S board installation board.

Step 8 : Remove the coupling screws and O-ring from the I/H assembly.

Step 9 : Remove the 4 screws fixing I/C slide 2 and the I/H assembly.



1 = I/H assembly	2 = I/C slide 2
3 = Screws (M3x8) fixing I/C slide 2 and the I/H assembly	

Step 10 : Remove the I/H assembly.

Step 11 : Reinstall all parts in the opposite order of the removal procedure.

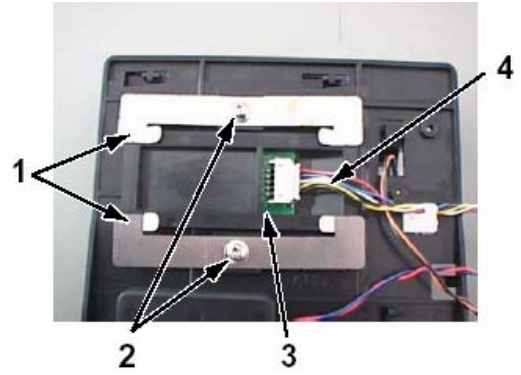
Notes :

- Please soak the O-ring in cleaning liquid before installation.

(2) Replacing the ink ID board assembly and the holder pressure spring

Step 1 : Remove the I/H assembly.

Step 2 : Remove the 2 screws fixing the holder pressure spring.



1 = Holder pressure spring (two-ply use)	2 = Screws (M3x6) fixing the holder pressure spring
3 = Ink ID board assembly	4 = SC cable assembly

Step 3 : Replace the holder pressure spring.

Step 4 : Remove the SC cable assembly connector from the ink ID board assembly.

Step 5 : Replace the ink ID board assembly.

Step 6 : Reinstall all parts in the opposite order of the removal procedure.

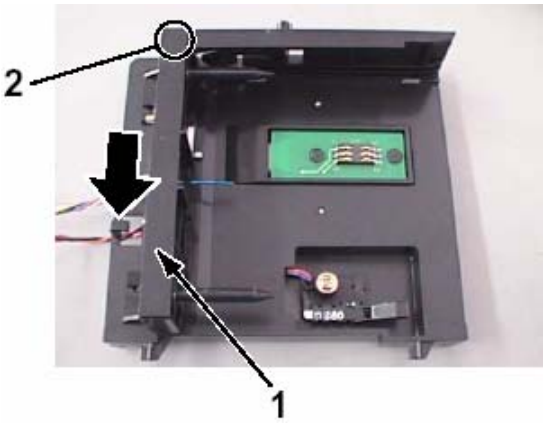
(3) Replacing the cartridge frame assembly

Step 1 : Remove the I/H assembly.

Step 2 : Remove the cables from the I/H assembly clamp.

Step 3 : Disengage the hook fixing the cartridge frame assembly, and then slide the cartridge frame assembly in the direction of the arrow to remove it.

Step 4 : Slide the cartridge frame assembly in the direction of the arrow to remove it.



1 = Cartridge frame assembly	2 = Hook

Step 5 : Replace the cartridge frame assembly.

Step 6 : Reinstall all parts in the opposite order of the removal procedure.

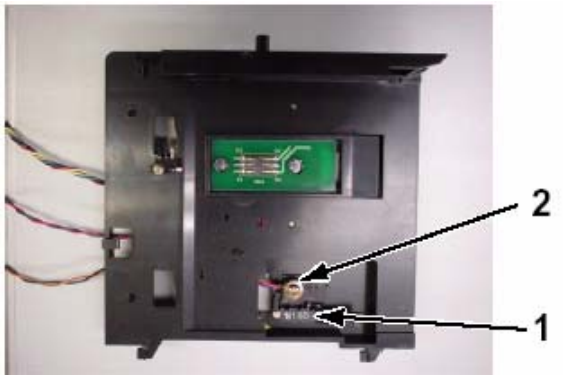
(4) Replacing the ink sensor assembly (ink NOT sensor, ink END sensor)

Step 1 : Remove the I/H assembly.

Step 2 : Remove the cables from the I/H assembly clamp.

Step 3 : Remove the cartridge frame assembly.

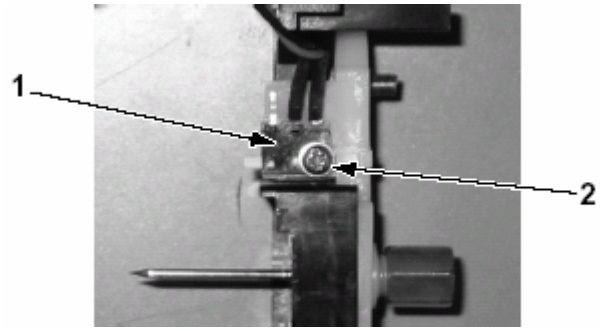
Step 4 : Remove the screw fixing the ink END sensor.



1 = Ink END sensor	2 = Screw (M3x10) fixing the ink END sensor

Step 5 : Remove the ink END sensor.

Step 6 : Remove the screw fixing the Ink NOT sensor to the Cartridge frame assembly.



1 = Ink NOT sensor	2 = Screw (M2x8) fixing the ink NOT sensor

Step 7 : Remove the ink NOT sensor.

Step 8 : Replace the ink sensor assembly.

Step 9 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- When installing the ink NOT sensor, do not tighten the screw firmly. Otherwise, the switch may not come out.

Step 10 : Make sure that the Ink NOT sensor switch moves.

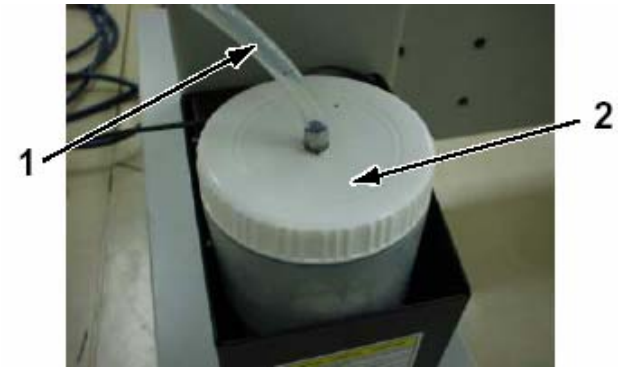
4.11. REPLACING SUPPORTS AND SCROLLER

4.11.1. Replacing the waste fluid bottle assembly (Rockhopper II 2H)

Notes :

- When replacing the waste fluid bottle assembly, be sure to perform following operation to clear the counter. "High ink initialization" or " Cleaning initialization": refer to "Counter Initialization Menu"

Step 1 : Remove the waste fluid tube from the waste fluid bottle assembly.



1 = Waste fluid tube	2 = Waste fluid bottle assembly

Step 2 : Replace the waste fluid bottle assembly.

Caution :

Waste ink will remain inside the tubes. Be careful that the ink is not spilled from the tube onto the printer or items close to the printer.

Step 3 : Reinstall all parts in the opposite order of the removal procedure.

4.11.2. Replacing the waste fluid bottle assembly (Rockhopper II 4H)

Notes :

- When replacing the waste fluid bottle assembly, be sure to perform following operation to clear the counter. "High ink initialization" or " Cleaning initialization": refer to "Counter Initialization Menu"

Step 1 : Remove the waste fluid bottle assembly.

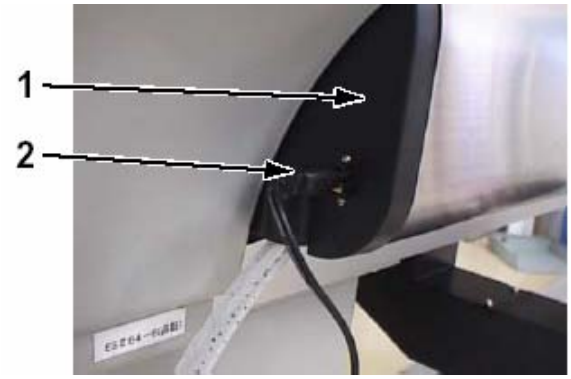
Caution :

Waste ink will remain inside the tubes. Be careful that the ink is not spilled from the tube onto the printer or items close to the printer.

4.11.3. Replacing the waste bottle box sensor assembly (RH II 2H)

Step 1 : Follow the instructions in "Replacing the waste fluid bottle assembly" to remove the waste fluid bottle assembly.

Step 2 : Remove the waste liquid BOX sensor assembly connector from the rear side cap R.



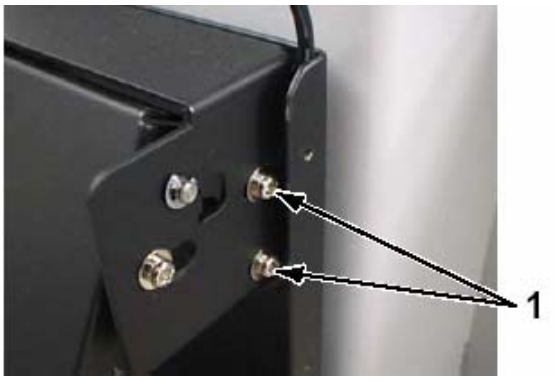
1 = Rear side cap R	2 = Waste liquid BOX sensor assembly connector

Step 3 : Remove the screws (3 at the front and 12 at the right and left) fixing the waste liquid bottle cover.

1 = Waste liquid bottle cover	2 = Screws (M3x6)

Step 4 : Remove the waste liquid bottle cover.

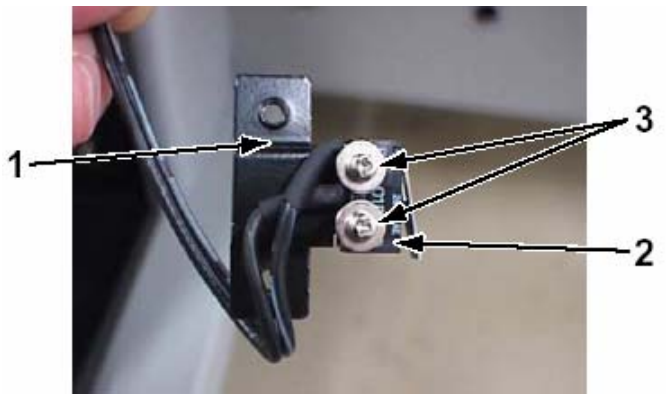
Step 5 : Remove the screws (2) fixing the waste liquid sensor installation board.



1 = Screws fixing the waste liquid sensor installation board (M3x6)

Step 6 : Remove the waste liquid sensor installation board.

Step 7 : Remove the screws (M2x8) fixing the waste liquid BOX sensor assembly.



1 = Waste liquid sensor installation board	2 = Waste liquid BOX sensor assembly
3 = Screws (M2x8)	

Step 8 : Remove the waste liquid BOX sensor assembly.

Step 9 : Reinstall all parts in the opposite order of the removal procedure.

Notes :

- When installing the waste liquid BOX sensor assembly, pay attention to following points :
  - Adjust the waste liquid BOX sensor assembly before installing the waste liquid bottle cover.
  - Position and install it so that "Sensor : Waste liquid tank" is properly switched in "Sensor Menu".

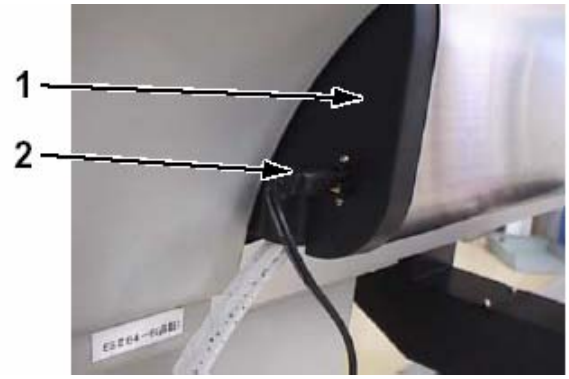
4.11.4. Replacing the waste bottle box sensor assembly (RH II 4H)

Step 1 : Follow the instructions in "Replacing the waste fluid bottle assembly" to remove the waste fluid bottle assembly.

Caution :

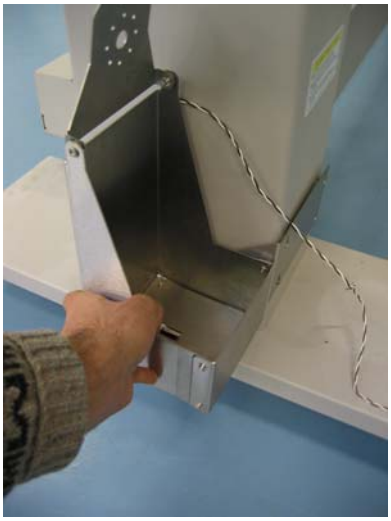
Waste ink will remain inside the tubes. Be careful that the ink is not spilled from the tube onto the printer or items close to the printer.

Step 2 : Remove the waste liquid BOX sensor assembly connector from the rear side cap R.



1 = Rear side cap R	2 = Waste liquid BOX sensor assembly connector

Step 3 : Remove the waste liquid box assy from the stand.



Step 4 : Remove the screws fixing the waste liquid sensor assembly.

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

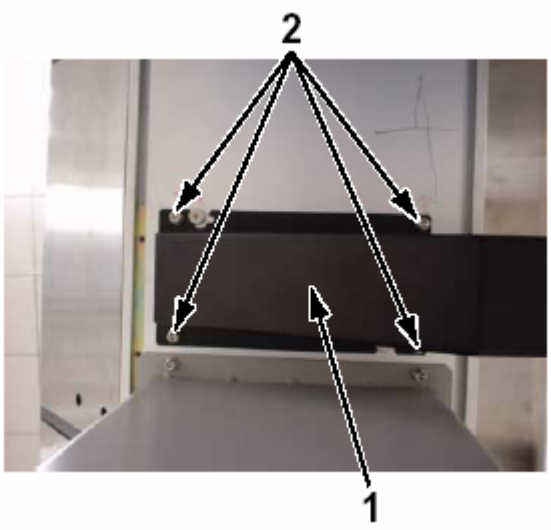
Notes :

- When installing the waste liquid BOX sensor assembly, pay attention to following points :
  - Adjust the waste liquid BOX sensor assembly before installing the waste liquid bottle cover.
  - Position and install it so that "Sensor : Waste liquid tank" is properly switched in "Sensor Menu".

4.11.5. Replacing the scroller R assembly

(1) Replacing the scroller R assembly

Step 1 : Remove the 4 hexagon socket head springs fixing the scroller R assembly.



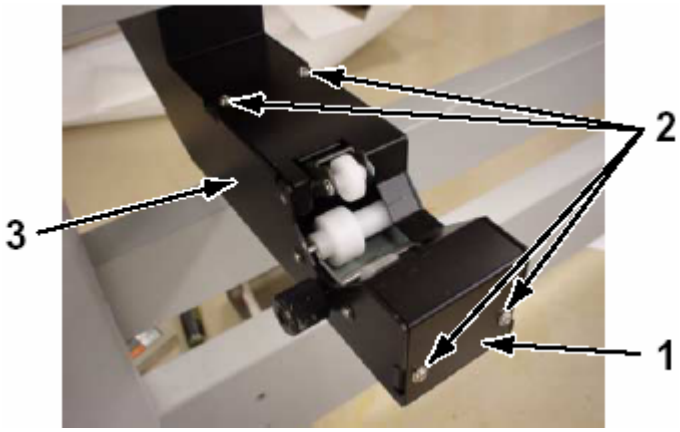
1 = Scroller R assembly	2 = Hexagon socket head springs

Step 2 : Replace the scroller R assembly.

Step 3 : Reinstall all parts in the opposite order of the removal procedure.

(2) Replacing the pressure roller, roller 1, and roller 2

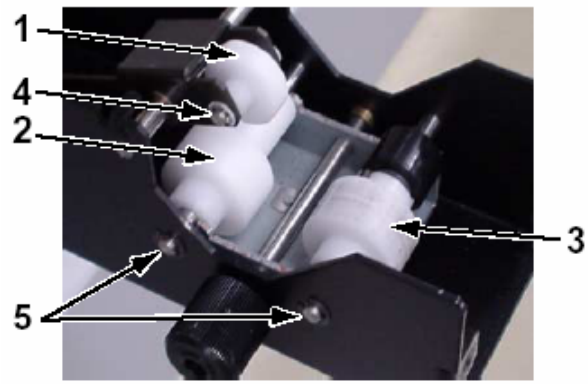
Step 1 : Remove the 4 screws fixing scroller receptacle cover R.



1 = Scroller receptacle cover R	2 = Screws (M3x8) fixing scroller receptacle cover R
3 = Scroller R assembly	

Step 2 : Remove the scroller receptacle cover R.

Step 3 : Remove the E ring fixing the axes of the rollers to be replaced.



1 = Pressure roller	2 = Roller 1
3 = Roller 2	4 = E ring (E-3)
5 = E ring (E-4)	

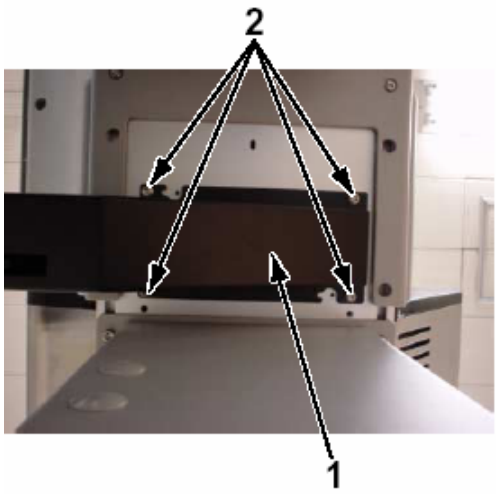
Step 4 : Replace the rollers.

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

4.10.6. Replacing the scroller L assembly

(1) Replacing the scroller L assembly

Step 1 : Remove the 4 hexagon socket head springs fixing the scroller L assembly.



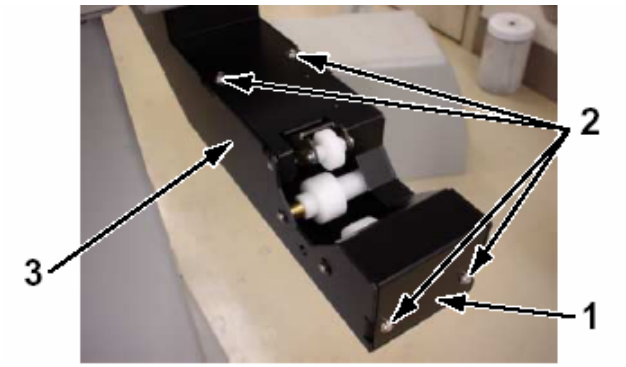
1 = Scroller L assembly	2 = Hexagon socket head springs

Step 2 : Replace the scroller L assembly.

Step 3 : Reinstall all parts in the opposite order of the removal procedure.

(2) Replacing the pressure roller and roller 1

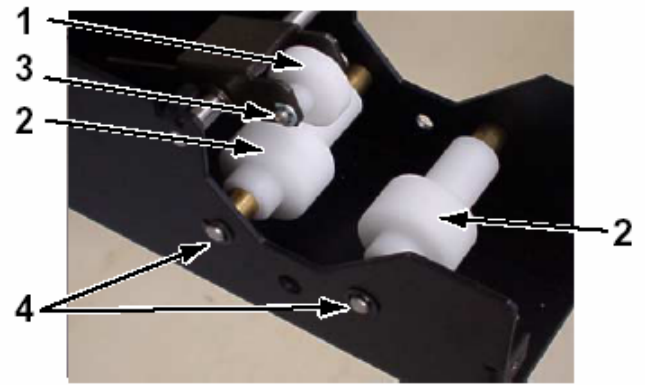
Step 1 : Remove the 4 screws fixing scroller receptacle cover R.



1 = Scroller receptacle cover R	2 = Screws (M3x8) fixing scroller receptacle cover R
3 = Scroller L assembly	

Step 2 : Remove scroller receptacle cover R.

Step 3 : Remove the E ring fixing the axes of the rollers to be replaced.



1 = Pressure roller	2 = Roller 1
3 = E ring (E-3)	4 = E ring (E-4)

Step 4 : Replace the rollers.

Step 5 : Reinstall all parts in the opposite order of the removal procedure.

5. SELF-DIAGNOSIS FUNCTION

5.1. INTRODUCTION

This chapter provides information on the self-diagnosis function.
The self-diagnosis function adjusts the printing accuracy. It is used in the manufacturing process, adjustment and maintenance.
The self-diagnosis function is implemented in the system firmware. All functions are available from the operation panel.

Notes :

- Refer to “Part names and functions ".

5.2. PREPARATION

Before you can use the self-diagnosis function, you should make the machine ready and display the self-diagnosis menu.

5.2.1. Preparations on Machine

Before starting up the self-diagnosis function, perform following preparations:

(1) Setting printing media

Set a roll media for adjustment.

Notes :

- Make sure to use coated paper for the adjustment purpose.

(2) Connecting power cable

Connect the power cable to the machine's inlet assembly and insert the power plug into an outlet.

Notes :

- Do not connect three or more power plugs to one outlet.

5.2.2. Starting Up

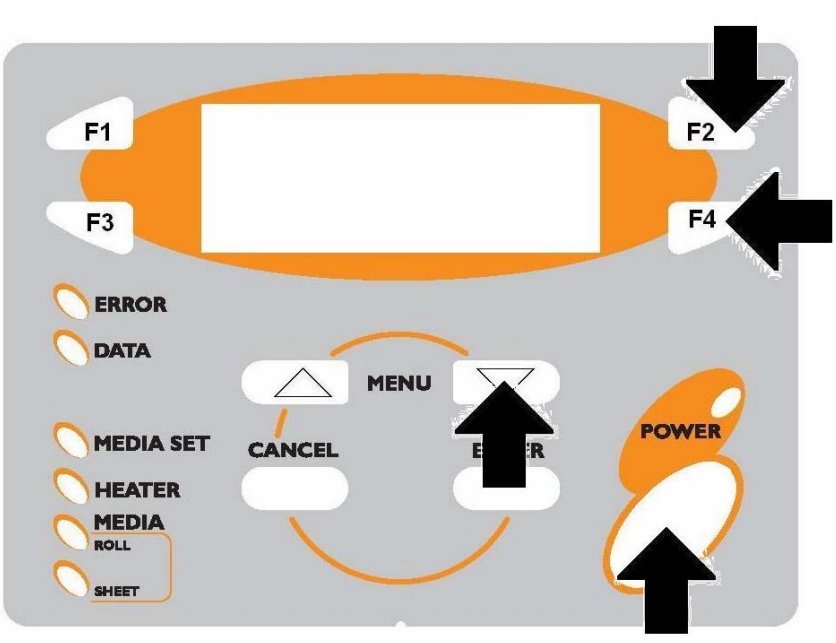
To use the self-diagnosis function, you should first display the self-diagnosis menu on the operation panel. The self-diagnosis menu is completely independent of the normal operation mode and self-diagnosis display mode. To call up the self-diagnosis menu, follow the steps below.

Step 1 : If the system is in the operation mode or the self-diagnosis menu mode, press the [POWER] key to power off the unit.

- The power is turned off.

Step 2 : Press and hold the [F2] key, [F4] key, and [MENU ↓] key simultaneously. While holding down these keys, press the [POWER] key.

- The system will enter the self-diagnosis mode and display the self-diagnosis menu.



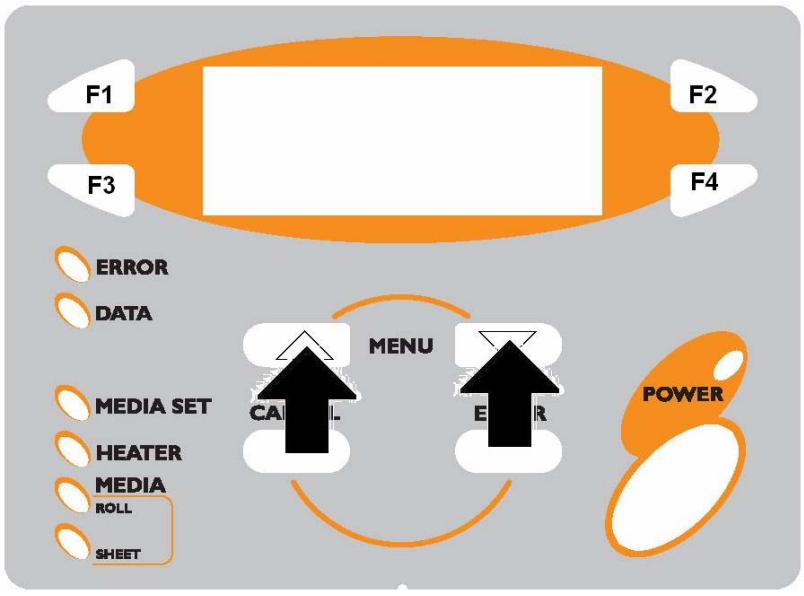
5.3. OPERATIONS IN SELF-DIAGNOSIS MODE

This section explains how to operate in the self-diagnosis mode and provides the list of available diagnosis items.

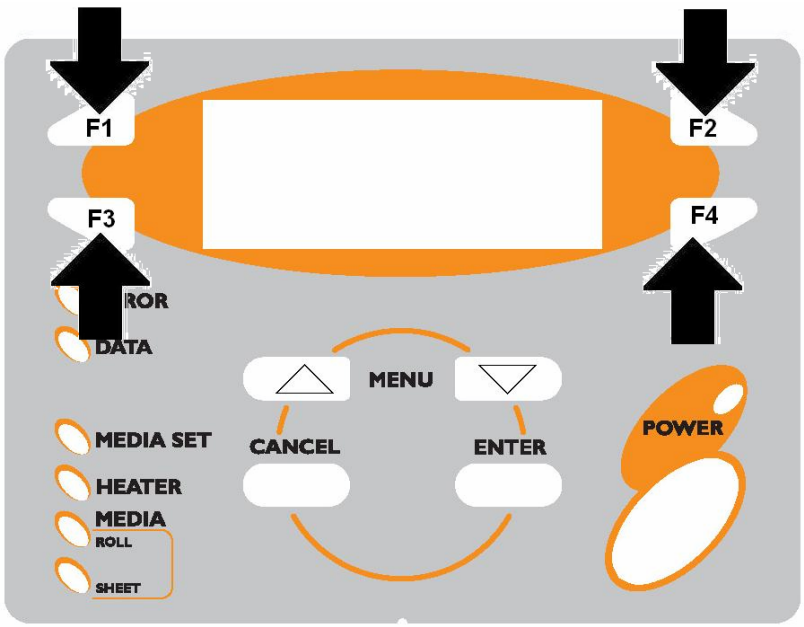
5.3.1. Operating Self-Diagnosis Mode

Follow the operation flow shown below to operate the self-diagnosis mode.
For more detailed operation steps, refer to the flow chart of the applicable diagnosis item.

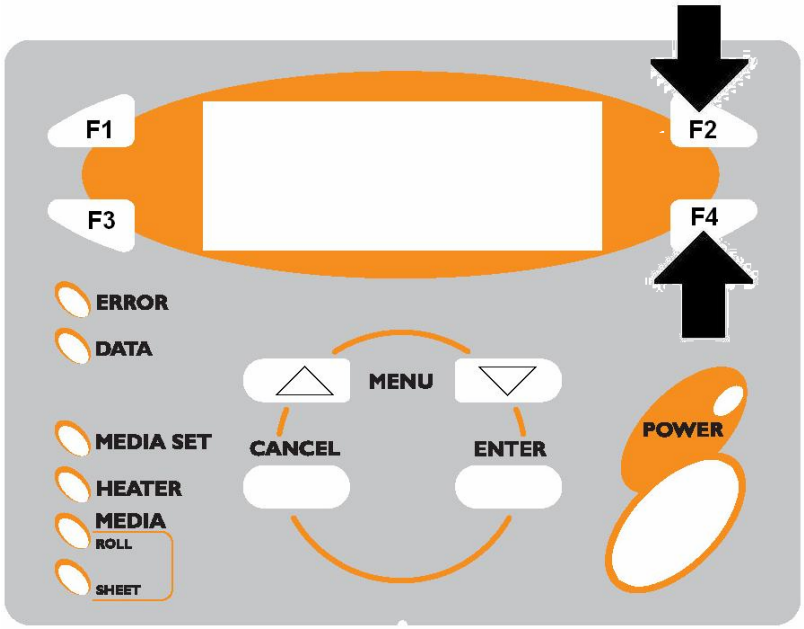
Step 1 : Press the [MENU ↑] key or the [MENU ↓] key on the operation panel to change over the diagnosis menu.



Step 2 : Press the [F1] key, [F2] key, [F3] key or [F4] key to select the applicable diagnosis item.

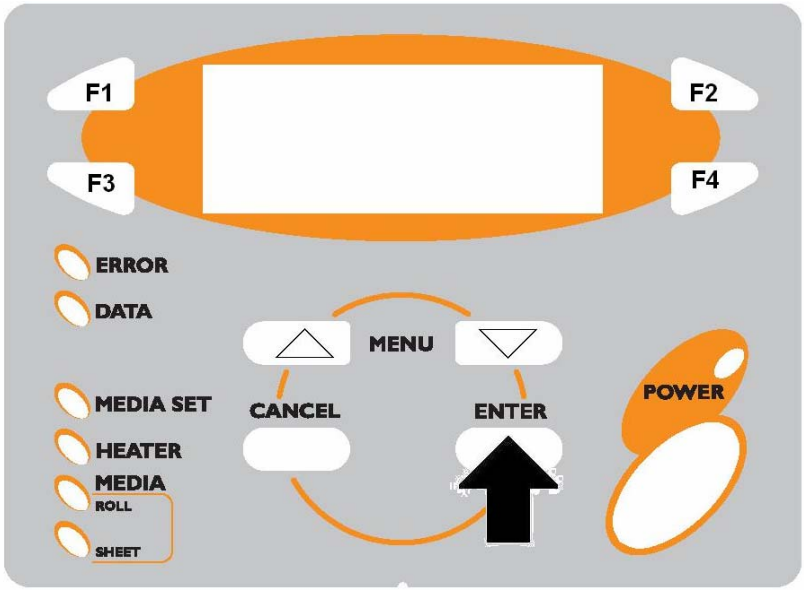


Step 3 : Press the [F2] key or the [F4] key on the operation panel to modify the set value.



Step 4 : To save the modified value, press the [ENTER] key on the operation panel.

- The modified set value is stored and a next item is displayed.

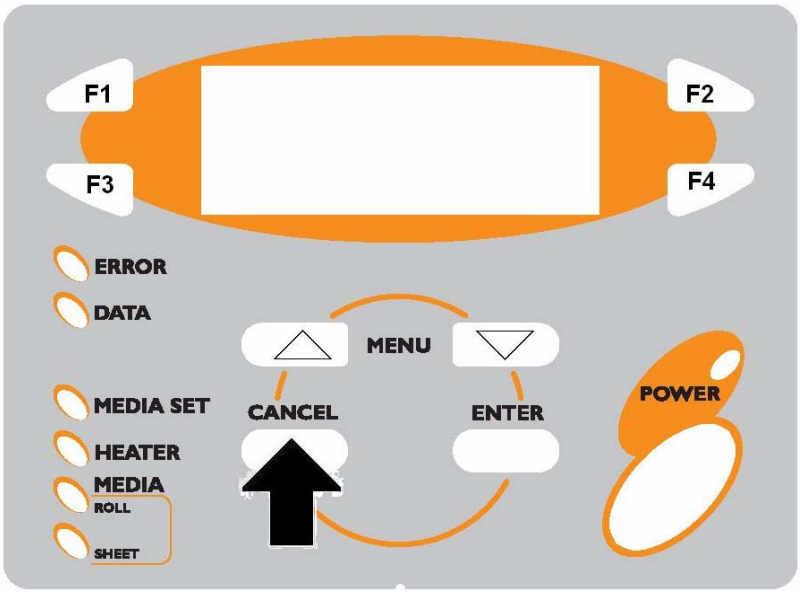


Notes :

- If you press the [CANCEL] key instead of the [ENTER] key, the modification will not be stored.

Step 5 : To quit the diagnosis menu, press the [CANCEL] key on the operation panel.

- The system returns to an upper hierarchy of the diagnosis menu.

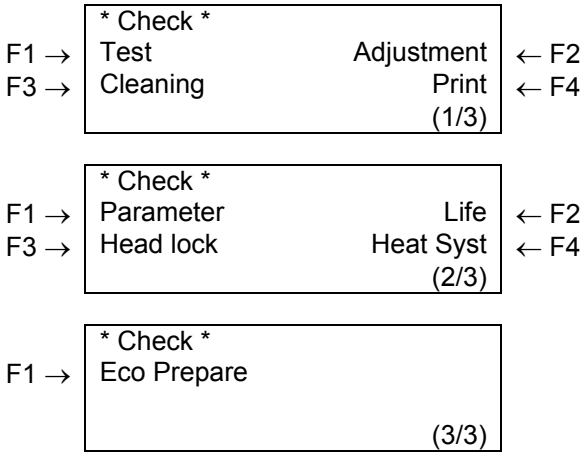


Step 6 : To exit the self-diagnosis menu, press the [POWER] key.

5.3.2. Diagnosis Items in Self-Diagnosis Menu

The Self-Diagnosis menu includes following diagnosis items.

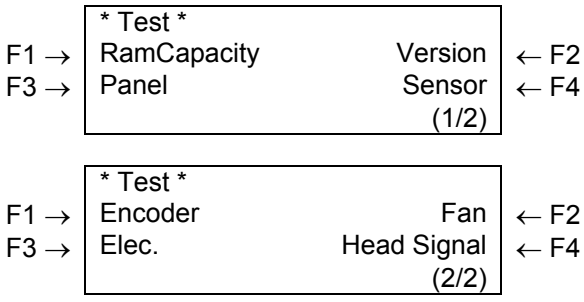
Initialization item	Description	Reference
Inspection Menu	Performs various inspections on the circuit boards, sensors, and fans.	Refer to Inspection Menu
Adjustment Menu	Performs various adjustments for the printer mechanism.	Refer to Adjustment Menu
Purge Menu	Performs mode-specified purge.	Refer to Purge Menu
Sample Printing Menu	Performs sample printing necessary for adjustment.	Sample Printing Menu
Parameter Menu	Configures various adjustment parameters.	Refer to Parameter Menu
Endurance Running Menu	Performs endurance running of the printer mechanism.	Refer to Endurance Running Menu
Head Lock Menu	Performs lock and release of the print head.	Refer to Head Lock Menu



5.4. TEST / INSPECTION MENU

In the Inspection menu, you can perform various inspections on the circuit boards, sensors and fans.
The Inspection menu includes the following diagnosis items.

Initialization item	Description	Refer to
Memory size	This menu displays the memory size.	→ Ram Capacity Menu
Version	Displays the versions of the firmware and mainboard assembly. ➢ Firmware version ➢ Backup parameter version ➢ Setting of dip switches ➢ Revision of mainboard assembly	→ Version Menu
Operation panel	Used to check the functions of the operation panel keys, LCD, and LED.	→ Operation Panel Menu
Sensor	This menu displays the sensor status in the operation panel. ➢ CR_HP sensor ➢ Cover sensor ➢ Lever sensor ➢ P_EDGE sensor ➢ P_REAR sensor ➢ HD_SLIDE sensor ➢ Thermistor sensor ➢ Ink ID sensor ➢ Ink NOT sensor ➢ Ink END sensor	→ Sensor Menu
Encoder	Displays the detected values from the following encoders. ➢ CR (Carriage) ➢ PF (Media feed)	→ Encoder Menu
Fan	This menu is used to check if the fan operates normally by turning ON and OFF the fan.	→ Fan Menu
History	Used to check the following records. ➢ Maintenance history ➢ Serious error history	→ History Menu
Head waveform	This menu is used to check the head-driving signal.	→ Head Signal Menu



5.4.1. RAM Capacity Menu

This menu displays the memory size.

* RamCapacity *	
RamCapacity	256 MB

Notes :

- The Memory Size menu displays the size of the memory installed on the mainboard (128 MB or 256 MB).

5.4.2. Version Menu

This menu displays following contents about the firmware and mainboard assembly.

- Firmware version
- Backup parameter version
- Setting of dip switches of mainboard assembly
- Revision of mainboard assembly

Notes :

- The details of the dipswitch setting of mainboard assembly are as follows.
  - Switch 1: OFF
  - Switch 2: OFF

* Ver *	
Firm	rh 2.08, mA
Parameter	1.00
	(1/2)

* Ver *	
DipSW	0x03
Board Rev	10
	(2/2)

5.4.3. Operation Panel Menu

This menu is used to check the functions of the operation panel keys, LCD, and LEDs.

(1) Operation panel key check

When you press a key on the operation panel, the name of the key is displayed on the LCD. To exit the operation panel key check, press the [CANCEL] key twice.

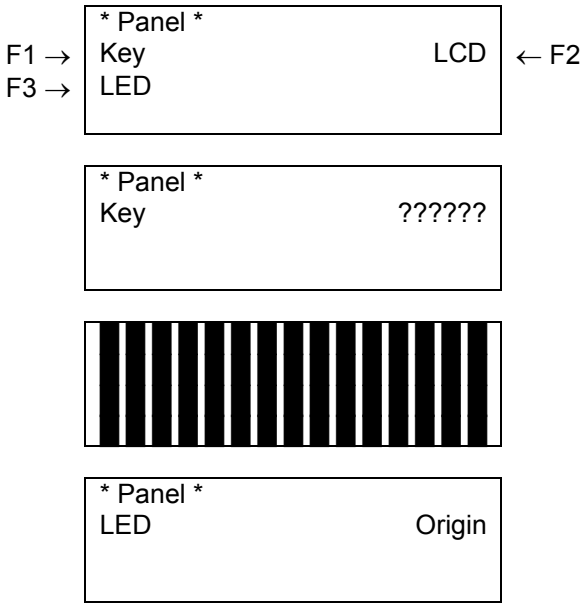
(2) LCD check

The entire LCD screen is filled in black. You can check for any missing dots.

(3) LED check

The following LEDs light up in order. The LCD displays the name of the LED that is currently illuminated.

- Power lamp
- Error lamp
- Data lamp
- Media set lamp
- Roll media lamp
- Cut media lamp
- Heater lamp



5.4.4. Sensor Menu

This menu displays the sensor status in the operation panel.
If the displayed sensor status does not match the actual machine status, replace or adjust the relevant sensor referring to "Table Inspection Items in Sensor Menu".

N°	Sensor name	Status in display	Refer to
	CR_HP sensor	ON/OFF	Replacing the transmission photosensor
	Waste fluid sensor	ON/OFF	Replacing the waste liquid BOX sensor assembly
	Cover sensor	Open/Close	Replace the cover R sensor assembly and the cover L sensor assembly
	Ink cover sensor	Open/Close	Removing the I/H cover
	Lever Up	ON/OFF	Replacing the transmission photosensor
	Lever Down	ON/OFF	Replacing the transmission photosensor
	Foot lever SW sensor	ON/OFF	
	P_EDDE sensor	0 to FF (0 to 255)	Replacing the P_EDGE sensor assembly
	P_REAR-R sensor	ON/OFF	Replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly
	P_REAR-L sensor	ON/OFF	Replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly
	HD_SLIDE sensor	ON/OFF	Replacing the SLIDE motor assembly, HD_SLIDE sensor assembly and slide motor installation board
	Head thermister	**°C	
	Ink ID sensor	Pig, Dye, WASH	Replacing the Cartridge Area
	Ink NOT sensor	12345678	Replacing the Cartridge Area
	Ink END sensor	12345678	Replacing the Cartridge Area

Notes :

- The ink ID sensor indicates the type of ink cartridge installed with the following ID.
  - W(ASH): Cleaning fluid
  - P(ig): Pigment system ink
  - D(ye): Dye system ink
  - + : Eco Solvent Plus
- The ink NOT sensor indicates the number where a cartridge is missing.
- For the ink end sensor, the colour of the ink that has run out is displayed.

* Sensor *		
CR Origin	Off	CR_HP sensor
Waste Bin	On	Waste fluid sensor
	(1/9)	

* Sensor *		
Wiper	On	Wiper sensor
Cap	Off	Cap sensor
	(2/9)	

* Sensor *		
Cover	Open	Cover sensor
InkCover	Open	Ink cover sensor
	(3/9)	

* Sensor *		
LeverUp	On	Lever up sensor
LeverDown	On	Lever down sensor
	(4/9)	

* Sensor *		
FootLever	On	Foot lever SW sensor
PaperEdgeAD	04e	P_EDGE sensor
	(5/9)	

* Sensor *		
PaperRear R	Off	P_REAR_R sensor
PaperRear L	Off	P_REAR_L sensor
	(6/9)	

* Sensor *		
Headslide	On	HD_SLIDE sensor
Temp	25°C	Head thermistor
	(7/9)	

* Sensor *		
Ink ID	12 34 5678	Ink ID Sensors
	++ww++++	
	(8/9)	

* Sensor *		
Ink Not		Ink NOT sensor
Ink End		Ink END sensor
	(9/9)	

5.4.5. Encoder Menu

This menu displays the detected values from the following encoders.

- CR_ENC (Carriage)
- PF_ENC (Media feed)

Notes :

- For the encoder-detected values, the encoder pulse numbers are displayed in hexadecimal number.

* Encoder *		
CR	0000	CR_ENC
PF	0000	PF_ENC

5.4.6. Fan Menu

This menu is used to check if the fan operates normally by turning it ON and OFF the fan.
As soon as you select this menu, the fan will be activated.
When you press the [CANCEL] key, the fan is off and the operation panel displays "Inspection: Fan".

* Fan *
[Cancel] End

5.4.7. History Menu

This menu is used to check the maintenance history and serious error history.

F1 → | * Elec. * / Maintenance Error | ← F2

(1) Maintenance history

Maintenance history for the following parts is displayed.

- Waste liquid tank capacity (#)
- Number of cuts (#)
- Number of wipes of the cleaner head (#)
- Number of rubs of the cleaner head (#)
- Number of drives of the CR motor (#)
- Number of drives of the PF motor (#)
- Number of printing copies (#)
- Number of cleanings (#)
- Discharge amount of head ink 1 (A, B nozzles), M dot
- Discharge amount of head ink 2 (A, B nozzles), M dot
- Discharge amount of head ink 3 (A, B nozzles), M dot
- Discharge amount of head ink 4 (A, B nozzles), M dot
- Cutter solenoid down times (#)

Notes :

- For the CR motor drive count, 1 pass becomes 1 count.
- For the PF motor drive count, 10 meters travel becomes 1 count.
- For 87-inch specifications, the discharge amount of head ink 5 to 8 (A, B nozzles) are added.

* Maintenance *		
WasteInk	00000000	Waste liquid tank capacity
Cut	00000000	Number of cuts
	(1/10)	

* Maintenance *		
Wiper	00000000	Number of wipes of the cleaner head
Rubbing	00000000	Number of rubs of the cleaner head
	(2/10)	

* Maintenance *		
CR Motor	00000000	Number of drives of the CR motor
PF Motor	00000000	Number of drives of the PF motor
	(3/10)	

* Maintenance *		
PrintingNumber	00000000	Number of printing copies
Cleaning	00000000	Number of cleanings
	(4/10)	

* Maintenance *		
Fire 1-A	00000000Mdot	Discharge amount of head 1-A nozzle ink
Fire 1-B	00000000Mdot	Discharge amount of head 1-B nozzle ink
	(5/10)	

* Maintenance *		
Fire 2-A	00000000Mdot	Discharge amount of head 2-A nozzle ink
Fire 2-B	00000000Mdot	Discharge amount of head 2-A nozzle ink
	(6/10)	

* Maintenance *		
Fire 3-A	00000000Mdot	Discharge amount of head 3-A nozzle ink
Fire 3-B	00000000Mdot	Discharge amount of head 3-B nozzle ink
	(7/10)	

* Maintenance *		
Fire 4-A	00000000Mdot	Discharge amount of head 4-A nozzle ink
Fire 4-B	00000000Mdot	Discharge amount of head 4-A nozzle ink
	(8/10)	

* Maintenance *		
Pump A	24926	Number of cycles of Pump A
Pump B	24980	Number of cycles of Pump B
	(9/10)	

* Maintenance *		
Cut Sole.	00000000	Cutter solenoid down time
	(10/10)	

(2) Serious error history

This menu displays the serious errors that have occurred so far.

Notes :

- A serious error history does not include any CPU errors.
- A serious error history can contain up to 32 error events.

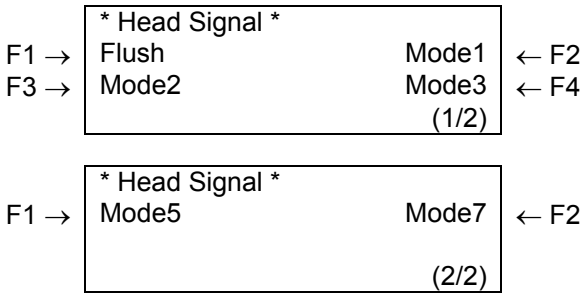
* Error *	
Error0	Y current
Error1	X motor
(1/16)	

* Error *	
Error2	X motor
Error3	X motor
(2/16)	

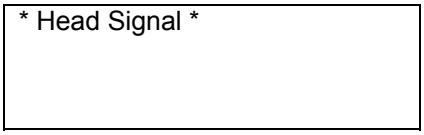
* Error *	
Error30	Y Current
Error31	No Error
(16/16)	

5.4.8. Head Signal Menu

This menu is used to check the head-driving signal.



Select :

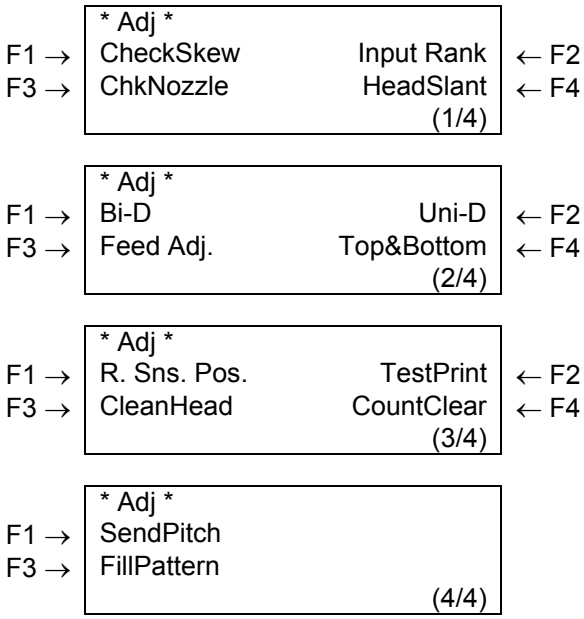


ENTER :

5.5. ADJUSTMENT MENU

In this menu, you can align the printing position and correct the media feed operation.
The Adjustment menu includes following diagnosis menus :

Initialization item	Description	Refer to
Skew check	In this menu, you can perform media feed and check the degree of skew in the media feed operation by means of the sensors.	Skew Check Menu
Head rank input	Inputs the characteristic value of the installed print head. Ink is replenished after this input.	Head rank input menu
Head nozzle check	Prints out a printing to check the ink discharge performance of the head nozzles.	Head Nozzle Check Menu
Head angle check	Prints out a print to check for printer head slant. Mechanical adjustment should be performed as necessary.	Head Slant Check Menu
Repeatability adjustment	Prints out a print to align the two-way printing position.	Repeatability Adjustment Menu
CW adjustment	Prints out a print to adjust any gaps between the heads.	CW Adjustment Menu
Band feed correction	Prints out a print to correct the media feed amount for each pass.	Band Feed Correction Menu (X Length)
Top & bottom adjustment	Sets the top and bottom margins.	Top & bottom adjustment menu
P_REAR sensor position adjustment	Adjusts the position of the P_REAR sensor using sheet media.	P_REAR sensor position adjustment menu
Test Print	Prints out a nozzle check pattern and the adjustment variables.	Test print menu
Head Wash	Cleans the tubes and heads using cleaning fluid.	Head wash menu
Software counter initialization	Clears various software counters.	Software Counter Initialization Menu
Feed amount check	Used to check the media feed amount for one band.	Feed Pitch Check Menu
Fill pattern	A fill printing pattern is printed by both ends of the head.	Fill printing menu



5.5.1. Skew Check Menu

In this menu, you can perform media feed and check the degree of skew in the media feed operation by means of the sensors.
When you select this item from the Adjustment menu, the machine feeds the length specified by the operation panel and checks for media feed skew by comparing the media edge positions before and after the media feed detected by the sensors.

Notes :

Before performing skew check, ensure that the media is set correctly.
Since the reference position where media has been set is determined the first time the media left edge is detected, errors may result as follows if the media is not setup correctly.

- Media errors occur during skew check and the operation stops.
- "Undefined Media" occurs frequently during media initialization when the power is turned on or media is cut.

* Check Skew * 0.1 m – 10.0 m + 1.0 m -	Set per 0.1 m

↓ ENTER

* Check Skew * Set Paper	When media is not set

↓ Media set

* Check Skew * Paper Initial

↓ Finishing media initialization

* Check Skew * Exc. Skew

↓ Finishing media edge detection normally

* Check Skew * SkewResult + 0.010 mm

5.5.2. Head rank input menu

Inputs the head rank.
The head rank is used to determine the operation voltage of the head and compensate the temperature.
Input head rank following the steps below.

(1) Selecting input method

When inputting head rank, select one of the following methods.

- Input using the QR code
- Input from the operation panel

(2) When input using the QR code has been selected

Make sure that the operation panel displays "Input HEAD1 QR code".
Input the QR code from the QR code reader.

```
* QRcode *
Input    Head1    QRcode
```

↓ ENTER
Correctly entered : Initial charge menu

```
* QRcode *
Head ID input
```

Incorrectly entered : Error
Press “ENTER” to re-enter

(3) When input from the operation panel is selected

Input the parameters of the upper and lower sections of the head rank using the operation panel keys.

```
* Panel *
ID1 - H                    +
   7BZ3E3CVXUWVWQQ 21 -
```

↓ ENTER

```
* Panel *
ID1 – L                    +
      00Y012VTTR  40UWJB -
```

↓ ENTER
Correctly entered : Initial charge menu

```
* QRcode *
Head ID input
```

Incorrectly entered : Error
Press “ENTER” to re-enter

(4) Initial ink charge menu

When the input head rank has been confirmed, initial ink charge is performed.

```
* Charge *
Ink charge    [enter]
```

→ [CANCEL] Initial charge is not executed.
Voltage input value is updated.

↓ ENTER

```
* Charge *
[1]     No Catridge
```

↓ Set cartridge

```
* Charge *
Ink Charge
```

5.5.3 Head Nozzle Check Menu

In this menu, you can check if the head nozzles, after refilling, can discharge ink correctly by printing a sample print.
To print out head nozzle check patterns, follow the steps below. The following is the description of the printing method.

Step 1 : Set media as necessary.

Notes :

- Refer to the User's Guide.
- Pressing the [ENTER] key in the Diagnosis menu in self-diagnostic mode moves the lever up and down.

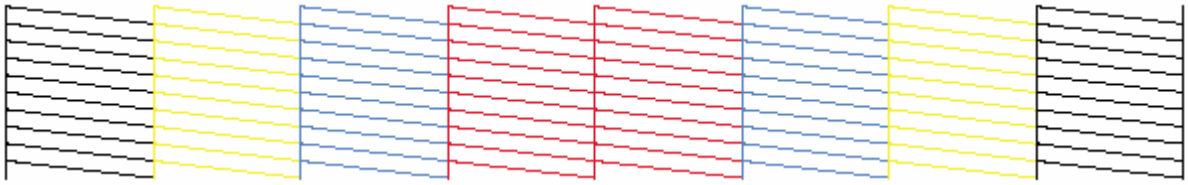
Step 2 : After media has been set, the machine prints out head nozzle check patterns in the following modes. The following is the description of the printing method.

- 1 pass Single way

Step 3 : Check the printed head nozzle check patterns for the following points. Check points are as follows.

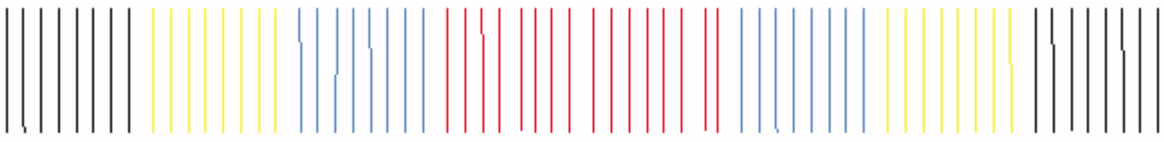
- Ink nozzle discharge amount (omission, discontinuity, meandering)
- Satellite
- T fence
- Nozzle alignment in vertical direction
- Nozzle alignment in horizontal direction

Nozzle check: Prints out patterns in the order of 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B.

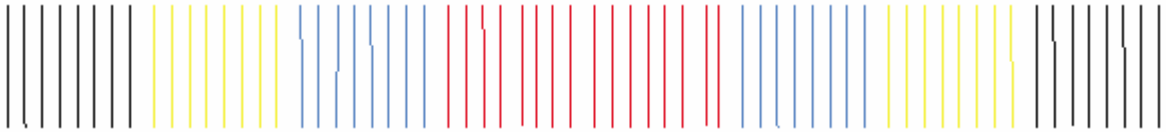


Nozzle alignment in vertical direction: Prints out patterns in the order of 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B.

Nozzle alignment in horizontal direction (CW): Prints out patterns in the order of 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B.

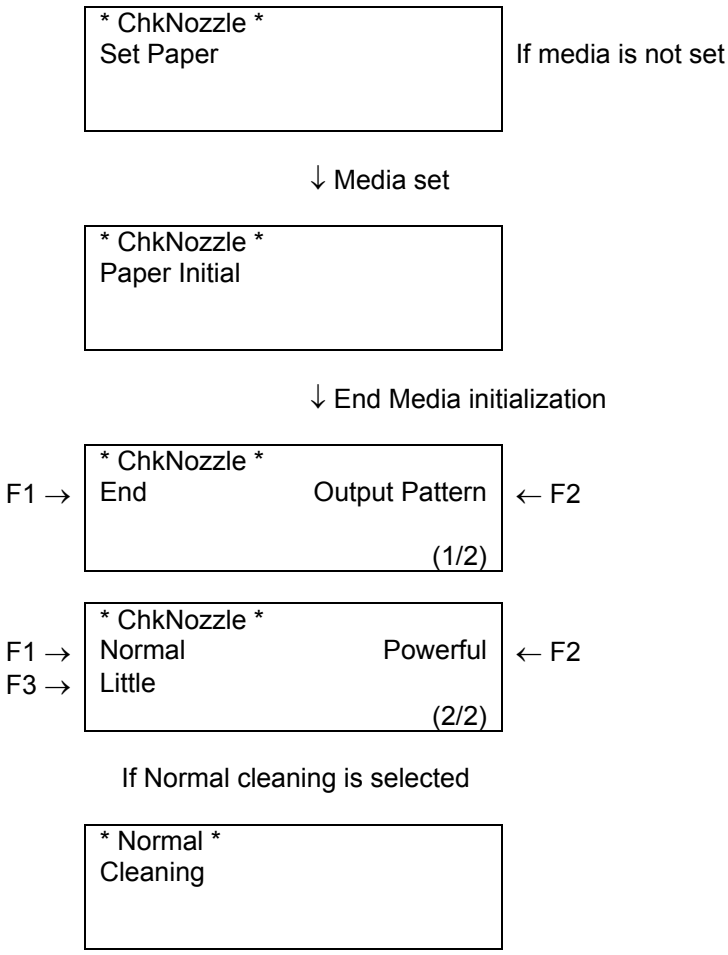


Nozzle alignment in horizontal direction (CCW): Prints out patterns in the order of 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B.



Step 4 : If any abnormal conditions are found in the ink discharge status of the head nozzles, perform ink purge on the relevant heads.

Step 5 : After the ink purge, the system returns to the purge selection menu.



5.5.4. Head Slant Check Menu

This menu prints out a sample printing to check for head slant.

Item	Description
Slant	All head slant check.
Front and back	Front and back position and slant of each head relative to the reference head check.
All	Confirmation of the forward and rear positions for all nozzle rows and all heads.
end	Check complete.

5.5.4.1Head slant adjustment

For a 4 head machine

Step 1 : Start the self-diagnostic function.

Notes :

- Refer to “Self-Diagnosis Function”

Step 2 : Select "Adj:HeadSlant".

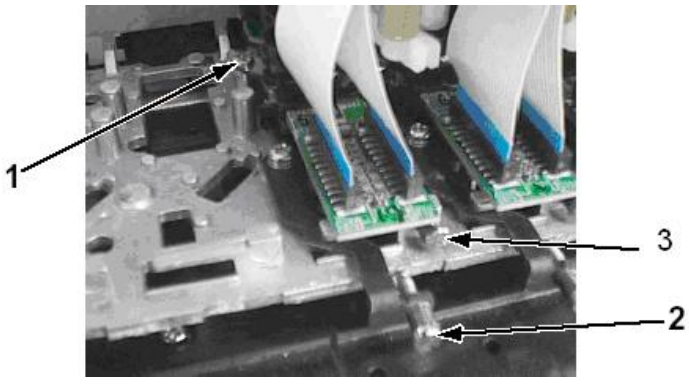
Step 3 : Print "Slant" pattern.
If dotted lines on pattern CW and CCW are not a straight line, which you can check with a magnifying glass (enlargement of at least 10), please go to step 4.

Notes :

When the printing pattern is printed, you will only see lines, and no notifications of ink channels. The head sequence shown below.

4 head model: 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B

Step 4 : Loosen the screw (with one turn) fixing the head stationary plate.

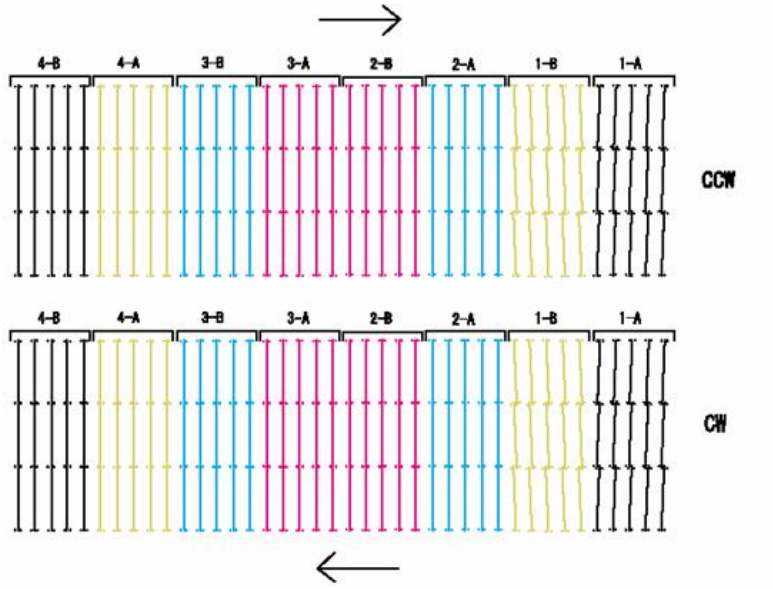


No.	Part
1	Screw (M2.5x5) fixing the head stationary plate
2	Angle adjustment screw
3	Front and back adjustment screw

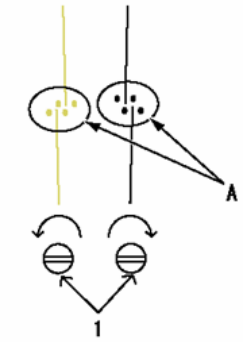
Step 5 : Make adjustments until amount of CW and CCW offset are identical.

Notes :

- In theory, the alignment of CW and CCW should be identical. But in practice, it is almost impossible to become a perfect alignment. When there is a slight difference between CW and CCW, be sure the heads are well seated.
- In case you only print uni directional, adjust the CW till it is aligned perfectly.
- In case you print bi-directional, and CW and CCW cannot be aligned more perfectly. Divide the fault equally.
- When printing the pattern, the head identifications 1A, 1B etc, are not printed. Analyse the pattern as shown below. Be sure to have five lines for each color.



How to adjust



What to become

No.	Part
1	Angle adjustment screw

Step 6 : Tighten the screw fixing the head stationary plate.

Repeat step 1 to 6 until the adjustment is correct for all heads.

For a 8 head machine

Step 1 : Start the self-diagnostic function.

Notes :

- Refer to “Self-Diagnosis Function”

Step 2 : Select "Adj:HeadSlant".

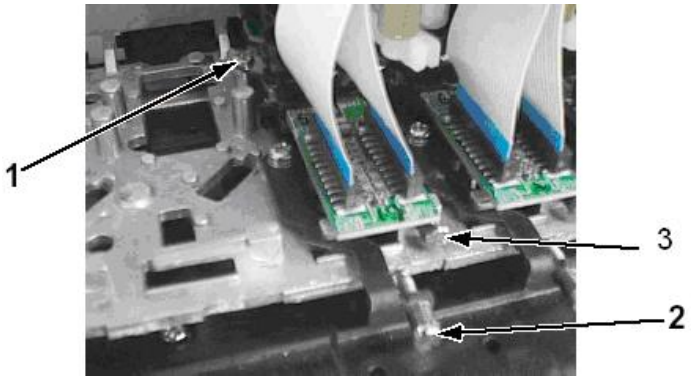
Step 3 : Print "Slant" pattern.
If dotted lines on pattern CW and CCW are not a straight line, which you can check with a magnifying glass (enlargement of at least 10), please go to step 4.

Notes :

When the printing pattern is printed, you will only see lines, and no notifications of ink channels. The head sequence shown below.

8 head model: 3A, 3B, 1A, 1B, 2A, 2B, 4A, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B

Step 4 : Loosen the screw (with one turn) fixing the head stationary plate.



No.	Part
1	Screw (M2.5x5) fixing the head stationary plate
2	Angle adjustment screw
3	Front and back adjustment screw

Step 5 : Make adjustments until amount of CW and CCW offset are identical.

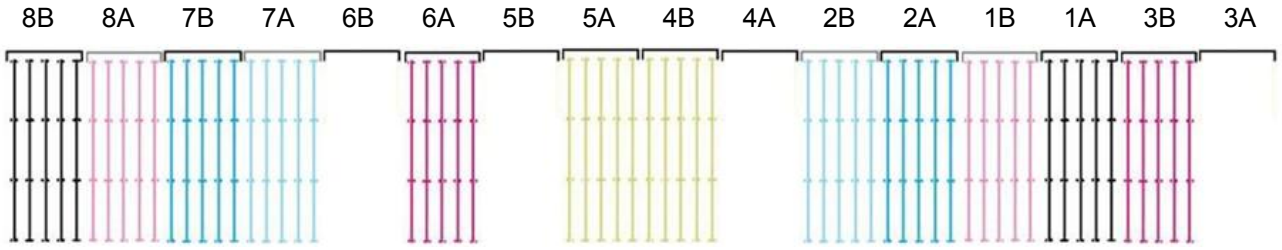
Notes :

- In theory, the alignment of CW and CCW should be identical. But in practice, it is almost impossible to become a perfect alignment. When there is a slight difference between CW and CCW, be sure the heads are well seated.

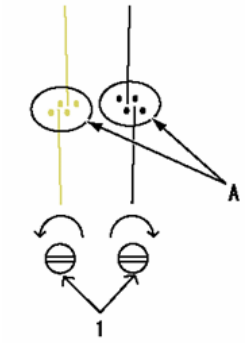
- In case you only print uni directional, adjust the CW till it is perfect aligned.
- In case you print bi-directional, and CW and CCW cannot be aligned more perfectly. Divide the fault equally.

Notes :

- When printing the pattern, the head identifications 1A, 1B etc, are not printed. Analyse the pattern as shown below. Be sure to have five lines for each color.



Adjustable head slant



Adjusted head slant

No.	Part
1	Angle adjustment screw

Step 6 : Tighten the screw fixing the head stationary plate.
Repeat step 1 to 6 until the adjustment is correct for all heads.

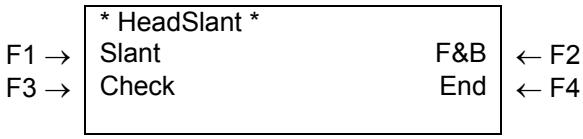
5.5.4.2. Front and back

For a 4 head machine

To perform a Head Front/Back Adjustment, please follow the steps mentioned below.

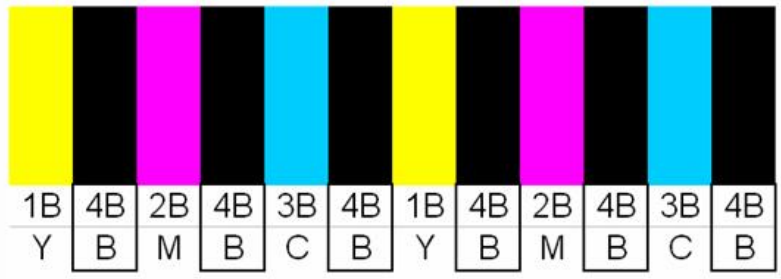
Step 1 : In diagnostic mode, go to [Adjust : Head Slant].

Step 2 : Press the [F2] key for F&B (front and back) adjustment.



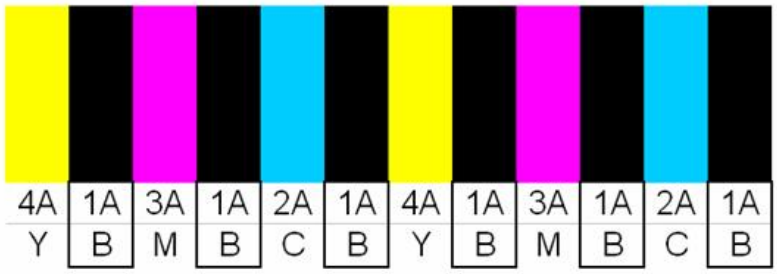
Step 3 : Print out [Front/Back] pattern. First pattern A with 1A as reference is printed, then pattern B with 4B as reference and finally A+B.

A+B



B

4B is the reference head

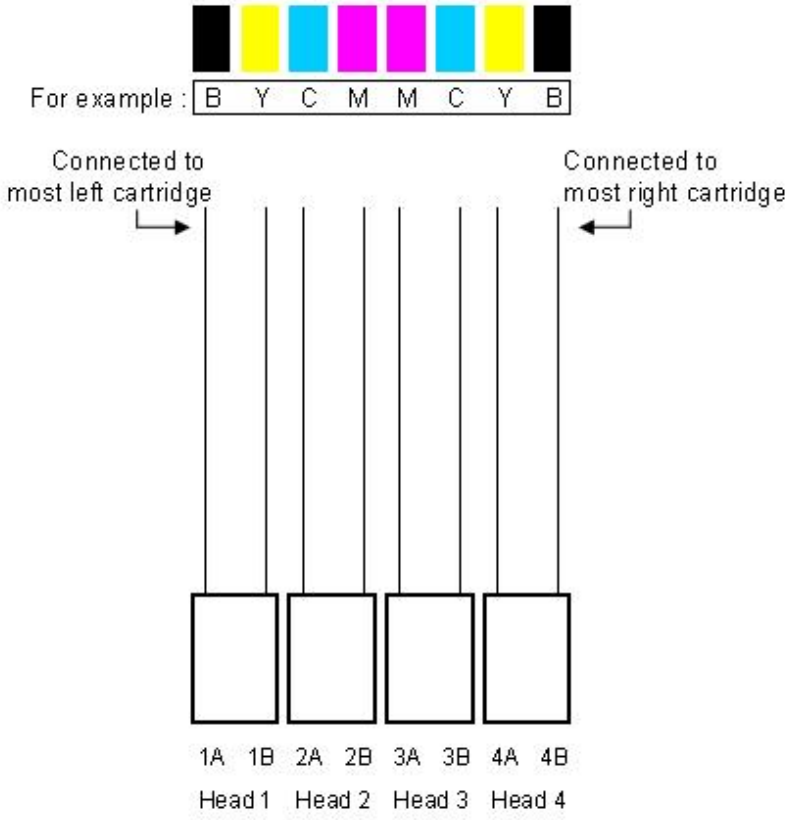


A

1A is the reference head

Notes :

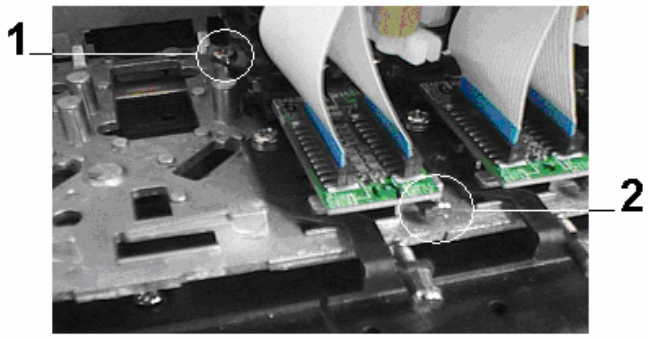
To help you identify the print heads on the test pattern please refer to the diagram below.


For example : B Y C M M C Y B
Connected to most left cartridge
Connected to most right cartridge
1A 1B 2A 2B 3A 3B 4A 4B
Head 1 Head 2 Head 3 Head 4

Know you see, 1A is Black, 1B is Yellow, etc (in our color combination).

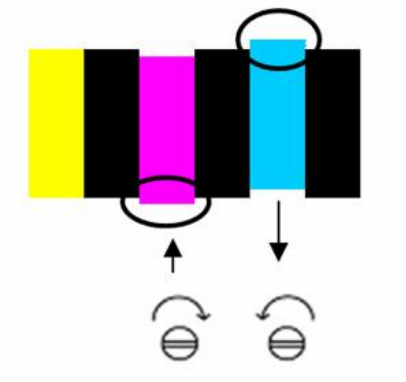
Step 4 : Check if all nozzles are in 1 row by using a magnifying glass with an enlargement of at least 10. If not, please proceed to step 5.

Step 5 : Loosen the screw with 1 turn, which secures the Head Fixing Plate.

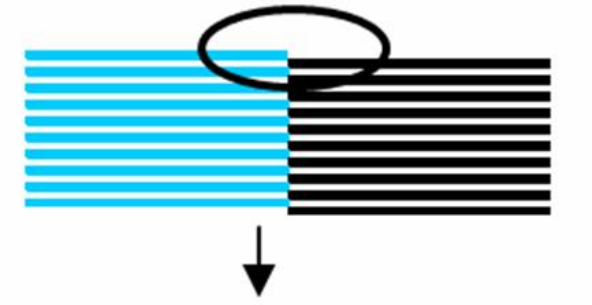


No.	Part
1	Head Fixing plate securing screw
2	Front/Back Adjustment Screw

Step 6 : When the nozzles are not in one row, adjust the head front/back position by moving the Head Front/Back Adjustment Screw the manner shown below. First adjust nozzle row A (1A, 2A, 3A, 4A). When adjusted perfectly, nozzle row B should automatically be adjusted. But in practice this isn't always a fact. When your determine a small misalignment after adjusting A well, readjust again until all nozzles of row A and B are perfectly aligned.



This pattern you will see when using a magnifying glass.



NOTE :

We only give an example for one colour combination. Please refer to "Operation Procedure Labels" in the Maintenance Manual where you can find the other possible colour combinations.

Step 7 : Tighten the screw which secures the Head Fixing Plate.

Step 8 : Repeat step 1 to 7 until the adjustment is correct.

For a 8 head machine

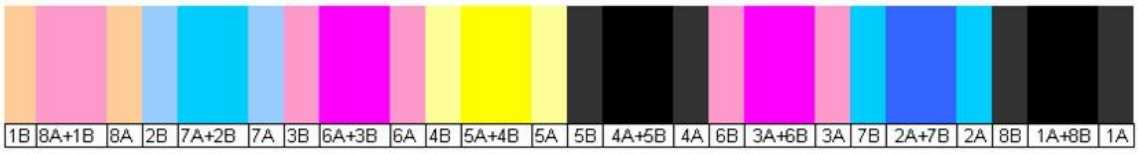
To perform a Head Front/Back Adjustment, please follow the steps mentioned below.

Step 1 : In diagnostic mode, go to [Adjust : Head Slant].

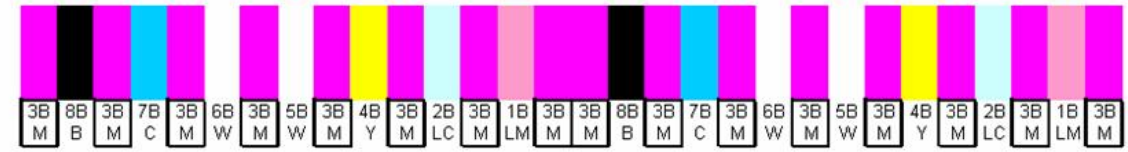
Step 2 : Press the [F2] key for F&B (front and back) adjustment.

	* HeadSlant *	
F1 →	Slant	F&B ← F2
F3 →	Check	End ← F4

Step 3 : Print out [Front/Back] pattern.



A+B

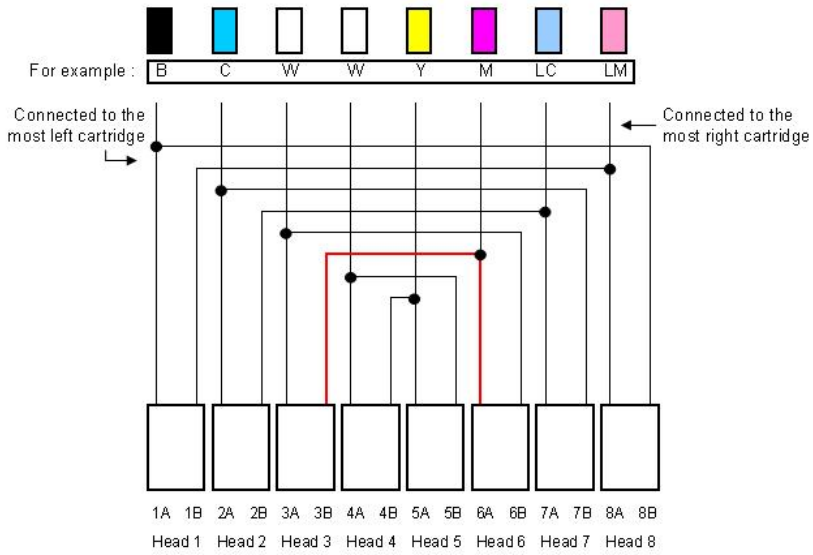


B
3B is the reference

A
6A is the reference

NOTE:

To help you identify the print heads on the test pattern please refer to the diagram below.

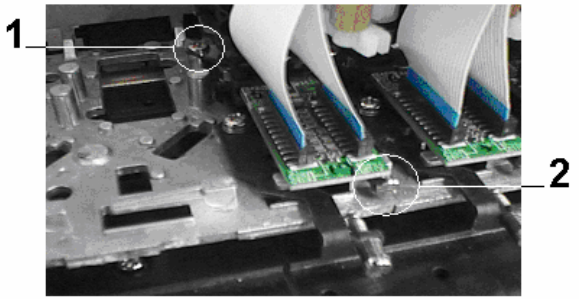

For example :
B C W W Y M LC LM
Connected to the most left cartridge
Connected to the most right cartridge
1A 1B 2A 2B 3A 3B 4A 4B 5A 5B 6A 6B 7A 7B 8A 8B
Head 1 Head 2 Head 3 Head 4 Head 5 Head 6 Head 7 Head 8

Now you can see, 1A is black. 1B is LM (follow the line till you reach the junction. Then go up to Light Magenta

Step 4 : Check if all nozzles are in 1 row by using a magnifying glass with an enlargement of at least 10.

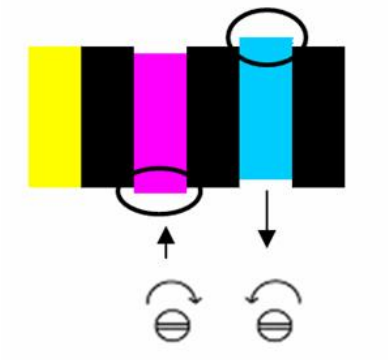
If not, please proceed to step 5.

Step 5 : Loosen the screw with 1 turn, which secures the Head Fixing Plate.

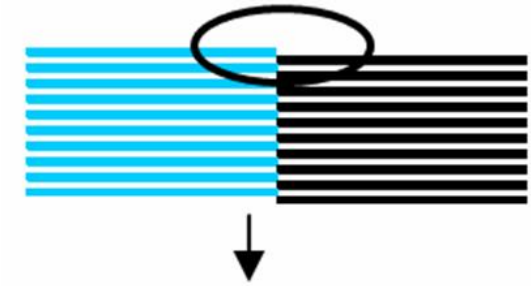


No.	Part
1	Head Fixing plate securing screw
2	Front/Back Adjustment Screw

Step 6 : When the nozzles are not in one row, adjust the head front/back position by moving the Head Front/Back Adjustment Screw the manner shown below. First adjust nozzle row A (1A, 2A, 3A, 4A). When adjusted perfectly, nozzle row B should automatically be adjusted. But in practice this isn't always a fact. When your determine a small misalignment after adjusting A well, readjust again until all nozzles of row A and B are perfectly aligned.



This pattern you will see when using a magnifying glass.



NOTE :

We only give an example for one colour combination. Please refer to "Operation Procedure Labels" in the Maintenance Manual where you can find the other possible colour combinations.

Step 7 : Tighten the screw which secures the Head Fixing Plate.

Step 8 : Repeat step 1 to 7 until the adjustment is correct.

Notes :

- Please note that you also have a third menu in head slant. Notably the check menu. With this pattern, it is possible to compare every front and back position of every head to each other

5.5.5. Repeatability Adjustment (Bi-Directional)

To perform a Repeatability Adjustment, please follow the steps mentioned below.

Step 1 : Start the self-diagnostic function.

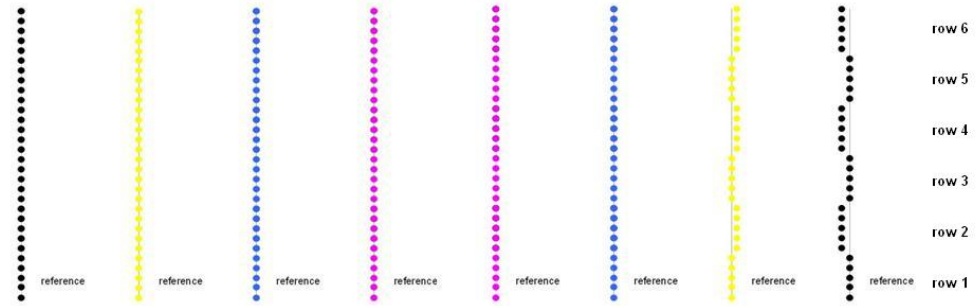
Notes :

- Refer to “Self-Diagnosis Function".

Step 2 : Select "Adj:Bi-D".

Step 3 : Print a repeatability pattern.

Step 4 : The odd rows (with each 5 dots) are the references. So the even rows should be adjusted (use a magnifying with an enlargement of at least 10)
When you want to move the even rows (with dots) to the right, you have to increase (+) the value.
For example: The value is 20, adjust it to 30 for example
The value is -20, adjust it to -10 for example
When you want to move the even rows (with dots) to the left, you have to decrease (-) the value.
For example: The value is 20, adjust it to 10 for example
The value is -20, adjust it to -30 for example



4B 4A 3B 3A 2B 2A 1B 1A

Notes :

- For 87-inch specifications, the head 5-A, 5-B, 6-A, 6-B, 7-A, 7-B, 8-A, 8-B are added.

Step 5 : Adjust reciprocation per head height.

- #1: Head height LOW
- #2: Head height MIDDLE
- #3: Head height HIGH

Notes :

- In the event that all parts of unit do not line up due to part or assembly precision error, make adjustments until everything in the area around center lines up in a straight line.

5.5.6. CW adjustments (Uni-Directional)

To perform CW adjustments, please follow the steps mentioned below.

Step 1 : Start the self-diagnostic function.

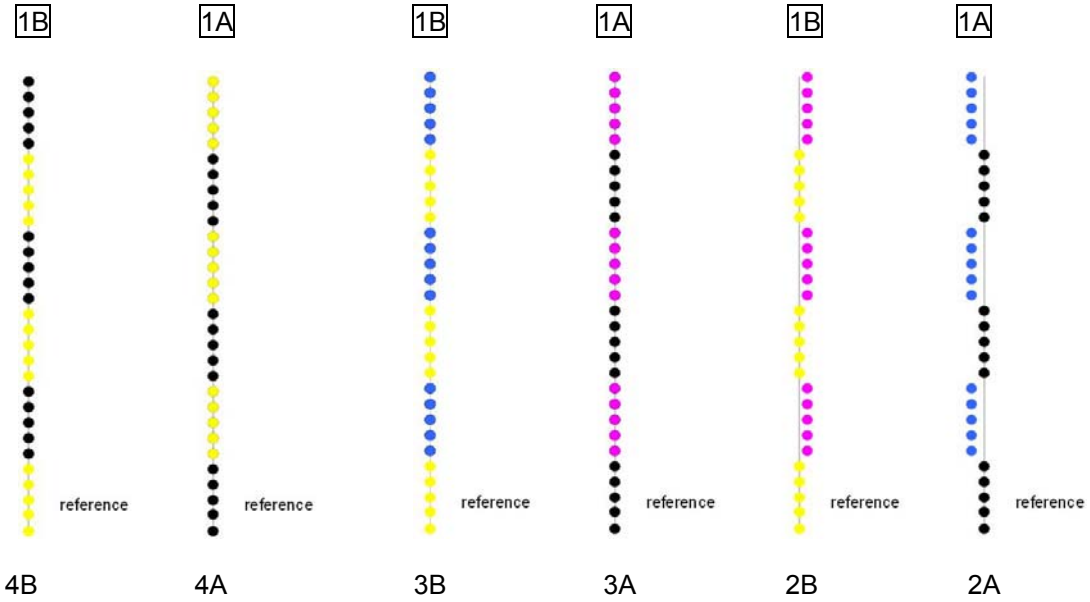
Notes :

- Refer to “Self-Diagnosis Function".

Step 2 : Select "Adj:Uni-D".

Step 3 : Print a CW adjustment pattern.

Step 4 : The odd rows (alternately 1A and 1B) are the references. So the even rows (2A, 2B, 3A, 3B, 4 A and 4B) should be adjusted (use a magnifying with an enlargement of at least 10)
When you want to move the even rows (with dots) to the right, you have to increase (+) the value.
For example: The value is 20, adjust it to 30 for example
The value is -20, adjust it to -10 for example
When you want to move the even rows (with dots) to the left, you have to decrease (-) the value.
For example: The value is 20, adjust it to 10 for example
The value is -20, adjust it to -30 for example



Notes :

- For 87-inch specifications, the head 5-A, 5-B, 6-A, 6-B, 7-A, 7-B, 8-A, 8-B are added.

Notes :

- In the event that all parts of unit do not line up due to part or assembly precision error, make adjustments until everything in the area around center lines up in a straight line.

5.5.7. Band Feed Correction Menu (X Length)

In this menu, you can correct the media feed distance.
To correct the media feed distance, you must first print out check patterns and measure the distance between lines drawn in the media feed direction. Then you enter the measured value through this menu. The system uses this entered value to determine the PF encoder resolution parameter in the firmware.

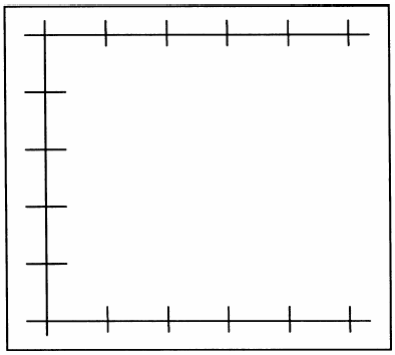
To perform an X-length Adjustment, please follow the steps mentioned below.

Step 1 : Go to Feed Adjustment.

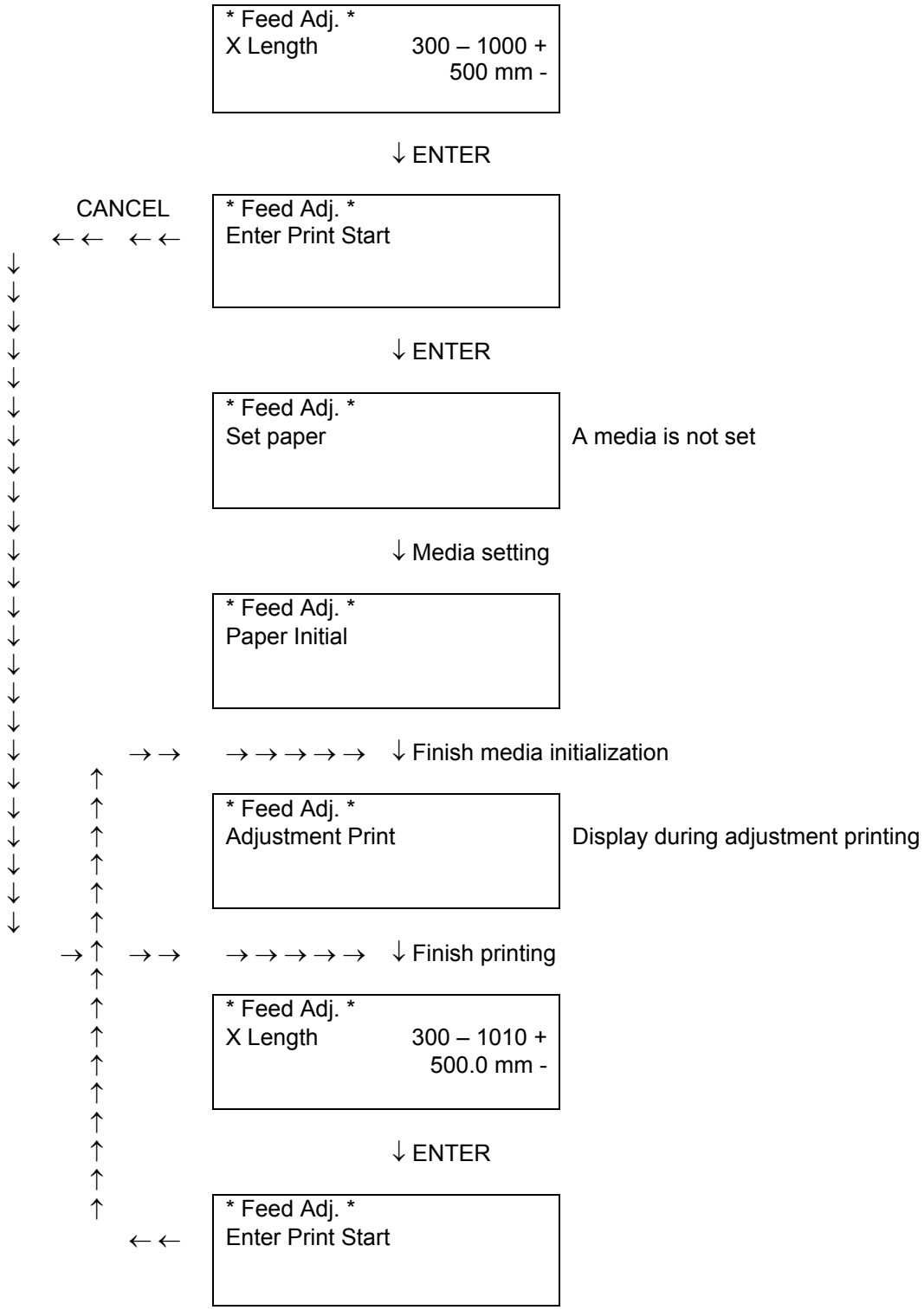
Step 2 : Set the parameter value to 900 mm.

Step 3 : Print out the Feed Adjustment pattern.

Step 4 : Measure the printed Band Feed Correction pattern.



Step 5 : Enter the measured value as the Media Feed Distance parameter.


* Feed Adj. *
X Length 300 – 1000 +
500 mm -
↓ ENTER
CANCEL
← ← ← ←
* Feed Adj. *
Enter Print Start
↓ ENTER
* Feed Adj. *
Set paper
A media is not set
↓ Media setting
* Feed Adj. *
Paper Initial
→ → → → → → → ↓ Finish media initialization
* Feed Adj. *
Adjustment Print
Display during adjustment printing
→ → → → → → → → ↓ Finish printing
* Feed Adj. *
X Length 300 – 1010 +
500.0 mm -
↓ ENTER
* Feed Adj. *
Enter Print Start
← ←

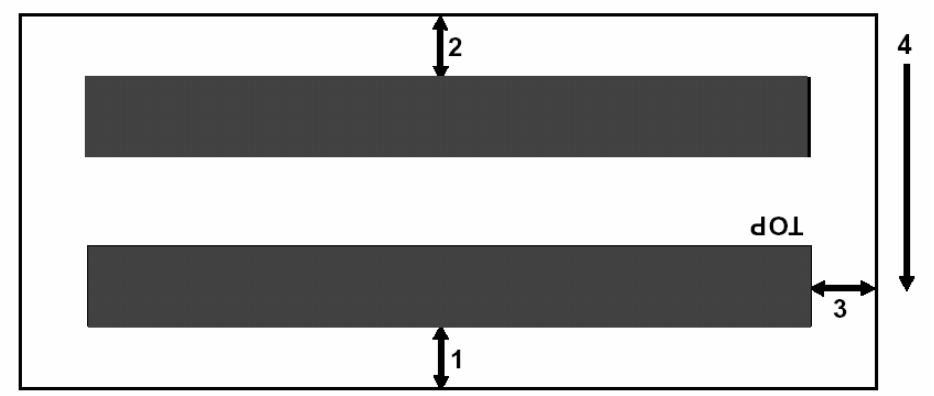
5.5.8. Top & bottom adjustment menu

Sets printing margins.
Make adjustments following the steps below.

Step 1 : Set media as necessary.

Step 2 : After the media has been set, pattern printing with band feed compensation and media cutting are performed. The following is the description of the printing method.
- Black, one path, one-way

Step 3 : Measure the following adjustment items for the results of the printing of the top & bottom adjustment pattern.
Measurements are carried out at the center of the media. The adjustment items are as follows.
- Top distance
- Bottom distance
- Side margin



1: Top distance
2: Bottom distance
3: Side margin
4: Media feed direction

Step 4 : Input each measurement as a parameter.

* Top&Bottom * Set Paper	If media is not set
↓ Set media	
* Top&Bottom * Paper Initial	
↓ End Media Initialization	
* Top&Bottom * Adjustment Print	Display during adjustment printing
* Top&Bottom * Top Length 0 – 40.0 + 5.0 mm -	
* Top&Bottom * Top Length 0 – 40.0 + 5.0 mm -	
* Top&Bottom * Side 0 – 20.0 + 5.0 mm -	

5.5.9. P_REAR sensor position adjustment menu

Adjust the P_REAR sensor position in order to accurately detect the length of the cut media.
During this adjustment, the P_REAR sensor position can be adjusted inside the firmware by referring to the nozzle, in order to obtain a maximum printable area starting from the ends of the media.
Make adjustments following the steps below.

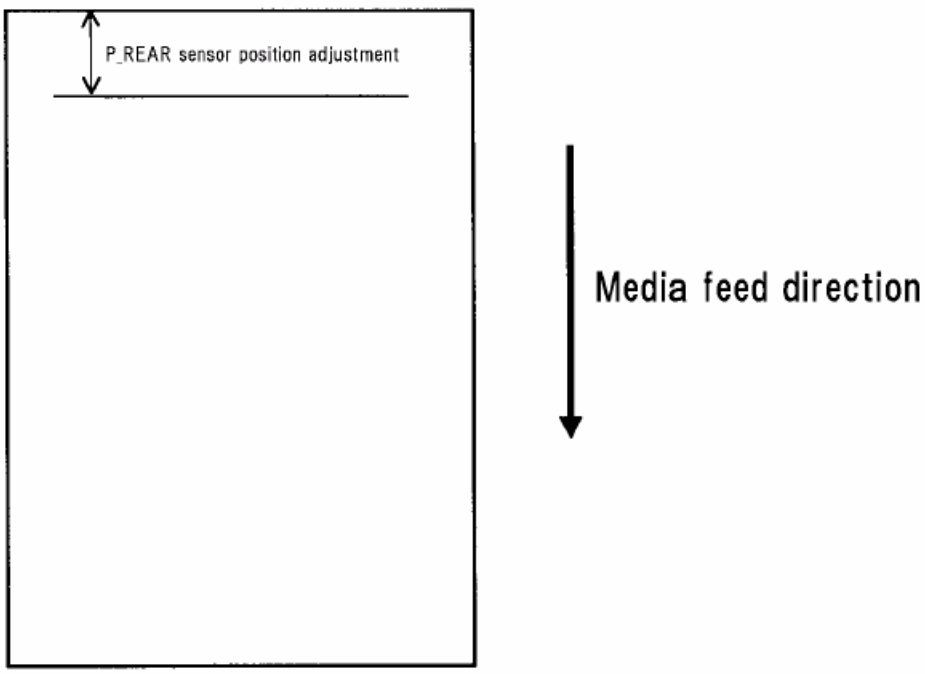
Step 1 : Set media as necessary.

Notes :

- Use cutting media for adjusting the P_REAR sensor. Set A3 cutting media in portrait orientation.
- P_REAR sensor position adjustment is a process necessary during manufacturing. This does not need to be done when band feed is compensated.

Step 2 : After the media has been set, a pattern printing with the P_REAR sensor position adjustment is performed.
The following is the description of the printing method.

- Draws a horizontal line (black 1 dot line) 17 mm away from the media end.



Step 3 : Measure the distance from the media end to the line just drawn.

Step 4 : Input the measurement as the parameter of the P_REAR sensor position.

* Rear Sensor * Set Cutting Paper

↓ Set media

* Rear Sensor * Paper Initial	If media is not set

↓ End media initialization

* Rear Sensor * Paper Width 297.0 mm	Check media width

↓ ENTER

* Rear Sensor * Rear Sensor 7.0 – 27.0 + 17.0 mm -

5.5.10. Test print menu

In this menu, you can print out adjustment patterns for checking various adjustment items.
Make adjustments following the steps below.

Step 1 : Set media as necessary.

Step 2 : After media has been set, the machine prints out the following test Printings.
- Nozzle check: Head nozzle check pattern
- Adjustment variables: Set values of various adjustment variables

Step 3 : Perform selected test print.

Print NOZZLE CheckAdj.Vari.

5.5.11. Head wash menu

In this menu, ink is drained and the head is cleaned at the completion of the manufacturing process and before replacing the print head.
Execute a cleaning following the steps below.

Step 1 : Initialize the waste ink history.
- Refer to 'Parameter Initialization Menu'

Step 2 : Discharge the waste fluid from the waste fluid bottle.

Step 3 : Press the [ENTER] key in the operation panel to confirm the head cleaning menu.

Step 4 : Remove all ink cartridges.

Step 5 : Press the [ENTER] key in the operation panel to drain the ink.

Step 6 : After the ink has been drained, install the head cleaning fixture.

Step 7 : Press the [ENTER] key in the operation panel to supply the cleaning fluid.

Step 8 : After the cleaning fluid has been supplied, remove the head cleaning fixture.

Step 9 : Drain the cleaning fluid by pressing the [ENTER] key in the operation panel.

Step 10 : Initialize the waste ink history.

Notes :

- When performing the ink cleaning, always initialize the waste ink history then start a head cleaning. Otherwise, during cleaning, the waste ink tank becomes full and cleaning is interrupted.
- After the head cleaning, always initialize the waste ink history. Otherwise, during filling, the waste ink tank becomes full, and filling is interrupted.
- Before ink filling, discharge the cleaning fluid, and wait for at least 30 minutes. Otherwise, the printing may be unstable.

```
* Clean Head *
Remove cartridge
```

↓ Eject all cartridge and press the [ENTER] key to drain ink

```
* Clean Head *
Ink Discharge
```

↓ End Ink draining

```
* Clean Head *
Set Cleaning jig
```

↓ Set the head cleaning jig and press the [ENTER] key to charge the cleaning liquid.

```
* Clean Head *
Head Cleaning
```

↓ Charge cleaning liquid

```
* Clean Head *
Remove cleaning jig
```

↓ Remove the head cleaning jig and press the [ENTER] key to drain the cleaning liquid.

```
* Clean Head *
Head Cleaning
```

5.5.12. Software Counter Initialization Menu

This menu initializes the software counters such as the ink amount counter.

Notes :

- Before delivery, always initialize the software counters.

The software counters that can be initialized through this menu are as follows.

Counter	Initial value
Ink amount counter	0
Ink consumption counter 1	0
Ink consumption counter 2	0
Ink consumption counter 3	0
Ink consumption counter 4	0
Ink consumption counter 5	0
Ink consumption counter 6	0
Ink consumption counter 7	0
Ink consumption counter 8	0
Cumulative printout timer	0
Waste ink counter	0
Ink ID mask	Reset
Initial ink charge flag	Set

Pressing the [ENTER] key in the operation panel performs the software counter initialization. Pressing the [CANCEL] key cancels the initialization.

```
* CountClear *
Counter reset ?
```

↓ ENTER

```
* CountClear *
Wait little time
```

↓ End initialization

```
* CountClear *
R. Sns. Pos.          Testprint
CleanHead             CountClear
                          (3/4)
```

5.5.13. Feed Pitch Check Menu

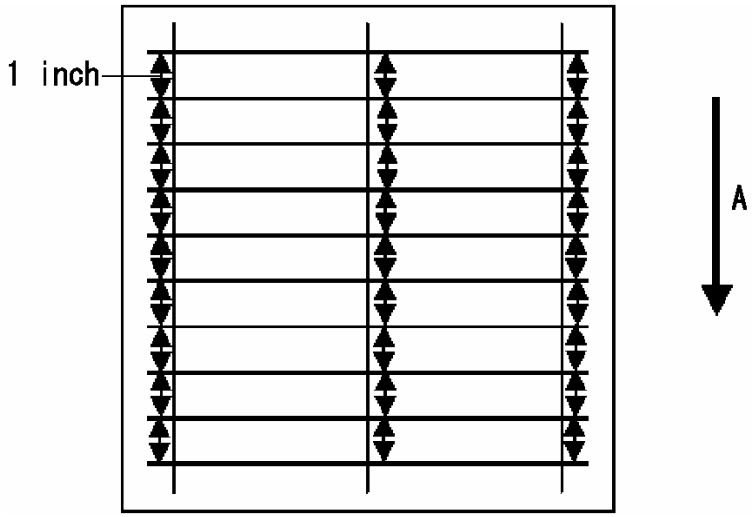
In this menu, you can check the media feed amount for one band by reviewing a sample printing. There is no adjustment item.
To check the feed pitch, follow the steps below.

Step 1 : Set media as necessary.

Step 2 : Select "Adj:SendPitch".

Step 3 : Select "Pattern 1" or "Pattern 2" to print feed pitch check patterns.
- "Pattern 1": Drawn with 1 inch (2.54 cm) intervals
- "Pattern 2": Draw a repetitive pattern with 1/4 inch (0.635 cm) intervals every 4 lines and 0.63 cm intervals between each of the 4 lines.

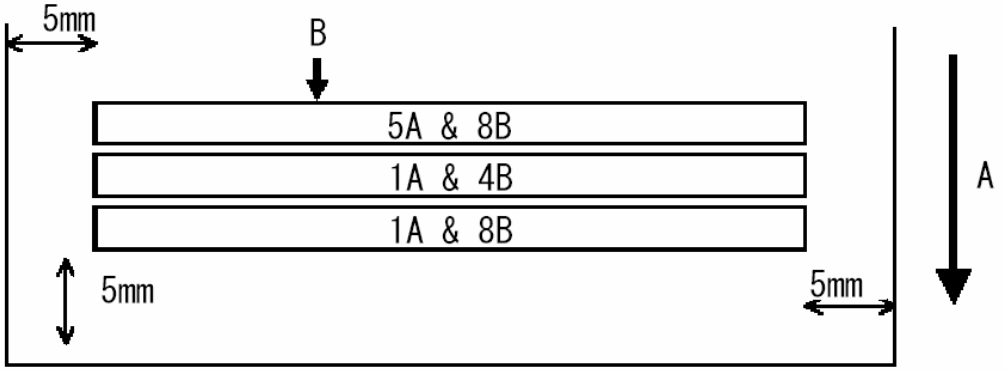
Step 4 : Confirm that it is drawn at 1 inch intervals as shown in the following drawing.



A = Media feed direction

5.5.14. Fill printing menu

A fill printing pattern is printed by both ends of the head.



A: Media feed direction
B: 100% print

50-inch specifications and 64-inch specifications are pattern printed in the sequence 1A&4B, 1A&4B, 1A&4B, while 87-inch specifications are printed in the sequence 1A&8B, 1A&4B, 5A&8B.

5.6. PURGE MENU

In this menu, you can purge ink from the printer heads.
The Purge menu includes the following diagnosis items.

Diagnosis item	Description
Normal	Performs normal purge.
Powerful	Performs powerful purge.
Little	Performs minimum purge.
Initial ink charge	Performs initial ink charge.

↓ Select item (Normal cleaning)

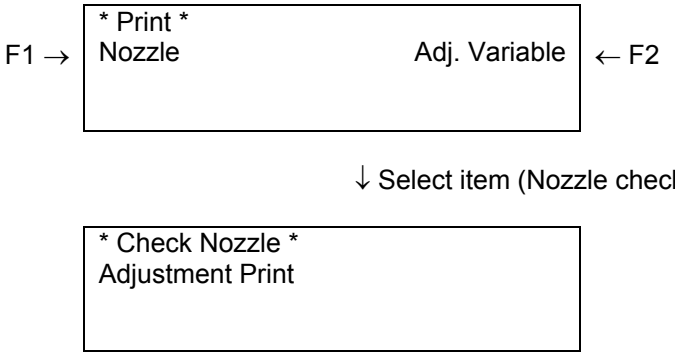
5.7. SAMPLE PRINTING MENU

This menu prints out a sample printing.
The Sample printing menu includes the following items.

Diagnosis item	Description
Nozzle Check	Prints the head nozzle check pattern.
Adjustment variables	Prints out the set values of various adjustment items.

Notes :

- When serial numbers are not input to this product, the serial numbers become blank spaces.



5.8. PARAMETER MENU

In this menu, you can modify the set values of various adjustment items (adjustment parameter).
The Parameter menu includes the following items.

Initialization item	Description	Refer to
Initialize.	Initializes the adjustment parameters.	Parameter Initialization Menu
Update	Updates the adjustment parameters.	Parameter Update Menu

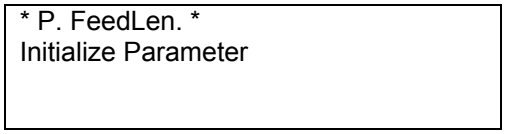
5.8.1. Parameter Initialization Menu

This menu initializes the adjustment parameters. The parameters that can be initialized in this menu are as follows.

- Capping position
- Media feed distance
- Serial number
- Head history
- Wiper history
- Waste ink history
- CR motor history
- PF motor history
- Pumps
- Waste tank
- Initialization of all items

↓ Select item (P. FeedLen.)

↓ ENTER



5.8.2. Parameter Update Menu

This menu updates the adjustment parameters. The parameters that can be updated through this menu are as follows.

- Head voltage
- Printing position alignment
- CW adjustment
- Media feed distance
- Mechanical parameter
- Ink parameter
- Ink ID mask
- Serial number

Notes :

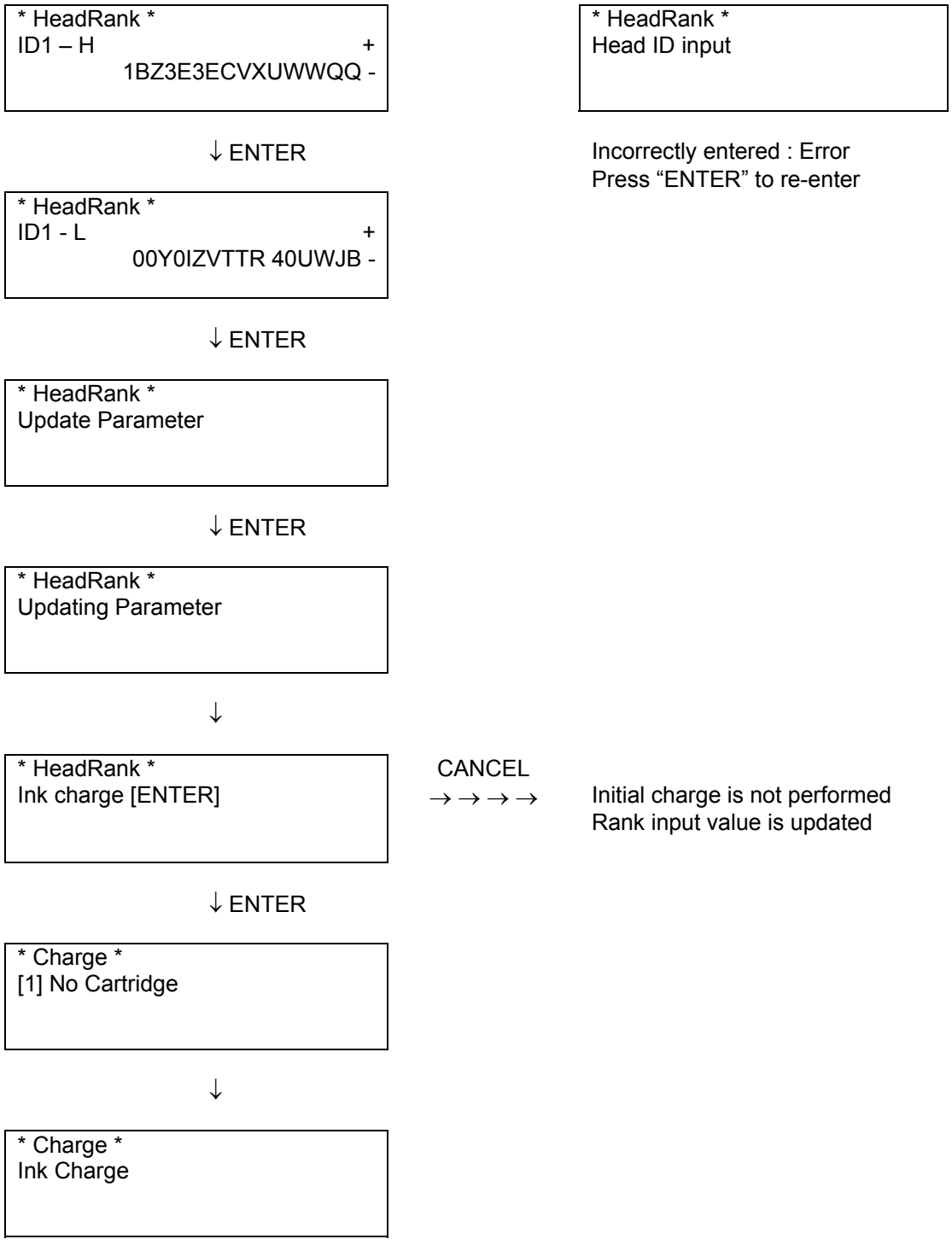
- If you update any parameter in the Parameter Update menu, always turn the power OFF after quitting the menu. The updated parameters will not be stored in the flash memory unless the system power is turned OFF.

	* Update *		
F1 →	HeadRank	PrintPos.	← F2
F3 →	CW Adj.	P. FeedLen.	← F4
		(1/2)	

	* Update *		
F1 →	Mechparm	Inparm	← F2
F3 →	Ink ID mask	serialNo.	← F4
		(2/2)	

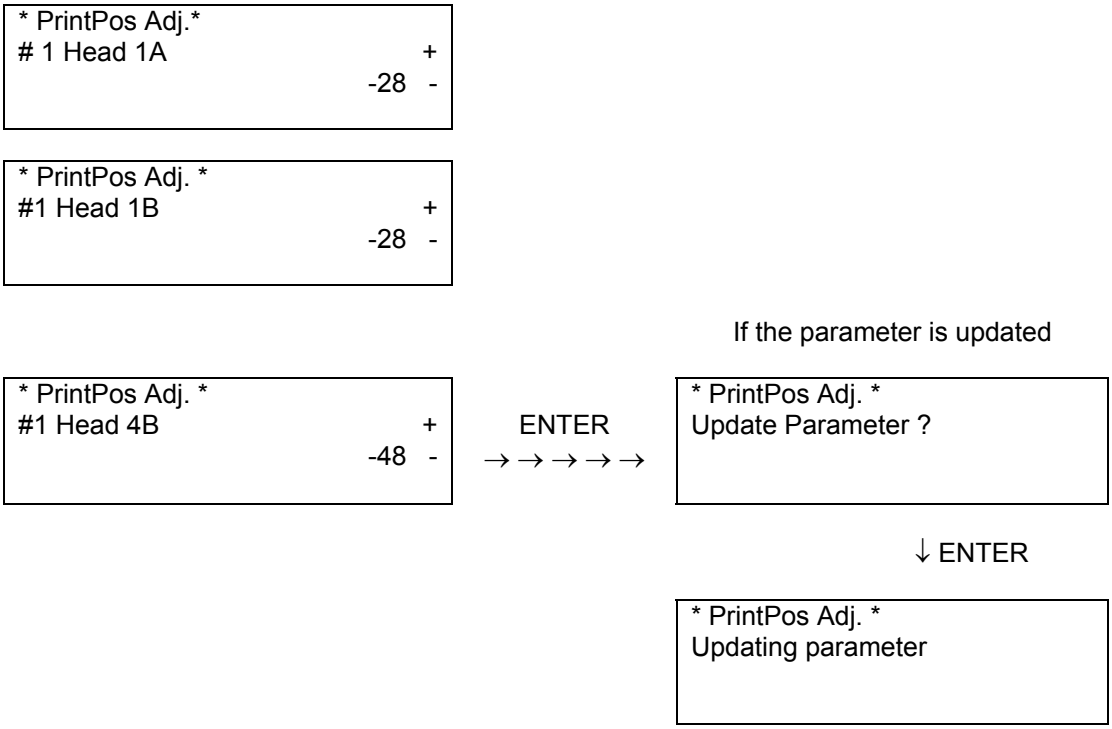
(1) Head ID

In this menu, you can enter a head ID. The head ID is used to determine the printer head-driving voltage and perform temperature correction.
After a head ID has been entered, the system shifts to the Ink Charge menu.



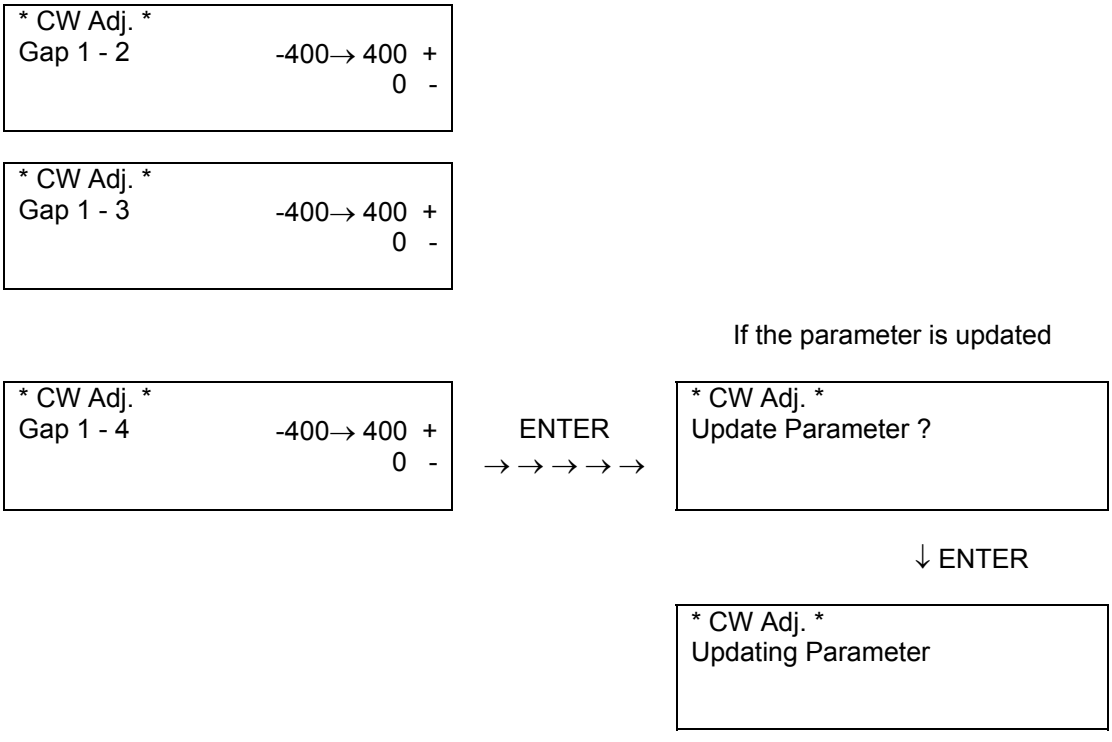
(2) Printing position alignment

This updates the printing position alignment parameters.



(3) CW

This updates the CW adjustment parameters.



(4) Media feed distance

This updates the media feed distance parameters.

```
* PaperFeedLen. *
X Length                290 – 1010 +
                          500.0 mm -
```

↓ ENTER

```
* PaperFeedLen. *
Update Parameter ?
```

↓ ENTER

```
* Update *
Updating Parameter
```

(5) Mechanical parameter

Update the mechanical position parameters. The setup items are as follows.

- Top distance
- Bottom distance
- Side margin
- P_REAR sensor position

* Mechparm *	
Top Length	0 – 40.0 + 5.0 mm -

* Mechparm *	
Bottom	0 – 40.0 + 5.0 mm -

* Mechparm *	
Side	0 – 20.0 + 5.0 mm -

* Mechparm *	
Rear Sensor	0 – 27.0 + 17.0 mm -

↓ ENTER

* Mechparm *
Update Parameter

↓ ENTER

* Mechparm *
Updating Parameter

(6) Ink parameter

This updates the ink parameter. The setup items are as follows.
Set: Ink not filled
Reset: Ink filled

Notes :

- When "set" has been selected on the ink parameter update menu, the product implements initial filling operations at the next start up.

```
* InkParameter *
Init. Fill Flag                +
                             Set -
```

↓ ENTER

```
* InkParameter *
Update Parameter ?
```

If the parameter is changed

↓ ENTER

```
* InkParameter *
Updating Parameter
```

(7) Ink ID mask

Update the ink ID mask parameters. The setup items are as follows.

- Set: Ink ID is always fixed. When a mask has been set, any cartridge inserted will be handled as dye 4 colours fixed.
- Reset: Resets the ink ID mask. Cartridge recognition becomes available via smart chip.

```
* Ink ID mask *
Ink ID mask                    +
                             Set -
```

↓ ENTER

```
* Ink ID mask *
Update Parameter
```

If parameter is updated

↓ ENTER

```
* Ink ID mask *
Updating Parameter
```

(8) Serial number entry

This is for entering the serial number.

* SerialNo. * + DD5*000001 -
* SerialNo. * + DD5C*00001 -
* SerialNo. * + DD5C1*0001 -
* SerialNo. * + DD5C12*001 -
* SerialNo. * + DD5C123*01 -
* SerialNo. * + DD5C1234*1 -
* SerialNo. * + DD5C12345* -

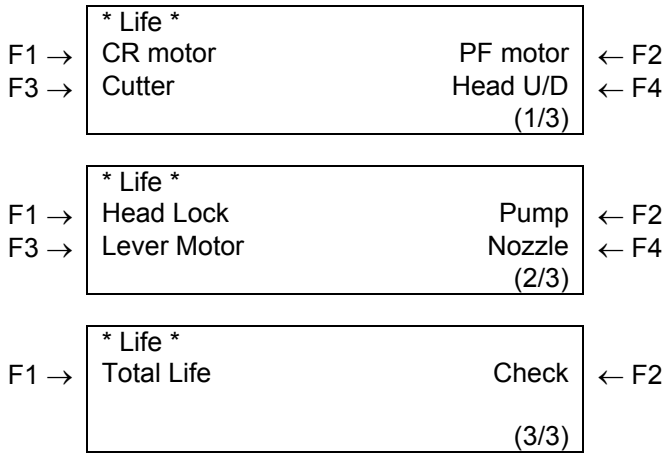
Notes :

- The third figure of a serial number differs with the machine size.
  - 5: 50 inch
  - 6: 64 inch
  - 8: 87 inch

5.9. ENDURANCE RUNNING MENU

In this menu, you can perform endurance running on the printer heads.
The Endurance Running menu includes the following items.

Initialization item	Description	Refer to
CR Motor	Performs carriage stroke.	CR Motor Endurance Menu
PF motor	Drives the PF motor.	PF Motor Endurance Menu
Razor Blade	Cuts media.	Cutter Endurance menu
Head up/down	Changes over the head height repeatedly.	Head Up/Down Endurance Menu
Head lock	Tests head lock operation. Performs wiper up/down operation via the selecting menu.	Head Lock Endurance menu
Pump	Drives the positive/negative pressure pump motor.	Pump Endurance menu
Lever motor	Drives the lever motor.	Sequential Printing Endurance Menu
Nozzle print	Prints out a printing by printer heads repeatedly.	Sequential Printing Endurance Menu
General endurance	Performs endurance running on the CR, PF and head up/down concurrently.	General Endurance Menu
Confirmation	Check the number of endurance running cycles.	Endurance Running Check Menu



5.9.1. CR Motor Endurance Menu

This menu performs endurance running for the CR motor.
You can perform carriage stroke according to your desired setting. The available settings are shown below.

Setup item	Description	Parameters	Remarks
Operation speed (CW, CCW)	Sets carriage operation speed (CW and CCW).	240, 300	Unit: cps
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000	

Notes :

- If the number of endurance running cycles has been set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.

* Speed CW * Speed	240 / 300 + 240 cps -	Speed (CW)

↓ ENTER

* Speed CCW * Speed	240 / 300 + 240 cps -	Speed (CCW)

↓ ENTER

* Aging Count * Count	-1 → 10000 + 50 -	Number of endurance running cycles

↓ ENTER

* CR Motor * Count	5	Perform endurance running

↓ ENTER

* CR Motor * End	50

5.9.2. PF Motor Endurance Menu

This menu performs endurance running for the PF motor.
You can drive the PF motor according to your desired settings. The available settings are shown below.

Setup item	Description	Parameters	Remarks
Media feed amount	Sets amount of media feeds per endurance operation.	0 to 100	Unit: mm
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000	

Notes :

- The motor drive parameters are determined as follows depending on the media feed amount.

Speed	54 cps
Acceleration	0.1 G
Deceleration	0.1 G

- If the number of endurance running cycles is set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.

* FeedAmount * 0 – 100.0 mm + 0.1 mm -	Media feed amount

↓ ENTER

* LifeCount * Count -1 → 10000 + 50 -	Number of endurance running cycles

↓ ENTER

* PFmotor * Count 5	Perform endurance running

↓ ENTER

* PFmotor * End 50

5.9.3. Cutter Endurance menu

This menu performs endurance running for the cutter.
You can perform the cutting operation according to the settings.

Caution :

Pay attention to the following points when performing the cutter endurance operation.
- Install usable ink cartridges.
- Make sure that media initialization is complete.

Performing the cutter endurance operation without ink cartridges could result in damage to the product if the cutter fails outside the cutting range.

The available settings are shown below.

Setup item	Description	Parameters	Remarks
Page size	Sets amount of media feeds per endurance operation.	30 to 3000	Unit: mm
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000	
Waiting time	Set the waiting time after one cycle of endurance running	40	Unit: second

Notes :

- If the number of endurance running cycles is set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.
- The waiting time is not modifiable.

* Page size *	30 – 3000 mm + 30 mm -	Page size
↓ ENTER		
* Cutter * Count	-1 → 10000 + 50 -	Count Endurance
↓ ENTER		
* Cutter * Time Wait (sec)	40	Check Waiting time
↓ ENTER		

* Cutter *		
Count	5	Perform endurance

↓ ENTER

* Cutter *	
End	50

5.9.4. Head Up/Down Endurance Menu

This menu performs endurance running for the head up/down operation.
You can perform the capping operation according to your desired settings. The available settings are shown below.

Setup item	Description	Parameters	Remarks
Waiting time	Set the waiting time after one cycle of endurance running	10	Unit: second
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000	

Notes :

- If the number of endurance running cycles is set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.
- The waiting time is not modifiable.

* LifeCount *		
Count	-1 → 10000 + 50 -	Number of endurance running cycles

↓ ENTER

* Head U/D *		
Time Wait (sec)	10	Check wait time

↓ ENTER or CANCEL

* Head U/D *		
Count	5	Perform endurance running

↓ ENTER or CANCEL

* Head U/D *	
End	50

5.9.5. Head Lock Endurance menu

Test endurance of head lock.
In the Head Lock Endurance menu, you can perform head lock operation according to the set items.

Notes :

Refer to "Head Up/Down Endurance Menu"
The wait time for head lock endurance is set to 10 seconds.

* Head lock *		
Wiper U/D	Yes/No + Yes -	Wiper up and down

↓ ENTER

* LifeCount *		
Count	-1 → 10000 + 50 -	Number of endurance running cycles

↓ ENTER

* Head Lock *		
Time Wait (sec)	10	Check wait time

↓ ENTER to perform endurance

* Head Lock *		
Count	5	Perform endurance running

↓ End

* Head Lock *	
End	50

5.9.6. Pump Endurance menu

This menu performs endurance running for the pump.
In the Pump Endurance menu, you can perform the pump motor assembly endurance operation according to the settings.
The available settings are shown below.

Setup item	Description	Parameters	Remarks
Operation speed	Sets the operation speed of the pump motor assembly.	High/Normal/Low	
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000	

Notes :

- If the number of endurance running cycles is set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.

F1 → F3 →

```
* Aging pump *
High                    Normal
Low
```

← F2

↓ Select speed (high)

```
* LifeCount *
Count          -1 → 10000 +
                        50 -
```

Number of endurance running cycles

↓ ENTER

```
* High *
Count                   5
```

Perform endurance running

↓ ENTER or CANCEL

```
* High *
End                    50
```

5.9.7. Lever Motor Endurance Menu

This menu performs endurance running for the lever motor.
You can drive the lever motor according to your desired settings. The available settings are shown below.

Setup item	Description	Parameters	Remarks
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000	

Notes :

- If the number of endurance running cycles is set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.

* LifeCount * Count	-1 → 10000 + 50 -	Number of endurance running cycles

↓ ENTER

* LeverMotor * Count	5	Perform endurance running

↓ ENTER or CANCEL

* LeverMotor * End	50

5.9.8. Sequential Printing Endurance Menu

This menu performs endurance running for the printer heads.
You can operate the printer heads according to your desired settings. The available settings are shown below.

Setup item	Description	Parameters
Printing mode	Set printing mode.	MODE 1, MODE 2, MODE 3, MODE 5, MODE 6, MODE 7
Media Cut	Sets whether to cut media each time one printing is printed out or not.	Yes, No
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000

Notes :

- If the number of endurance running cycles is set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.

F1 → / F3 →

```
* Print Mode *
MODE1          MODE2
MODE3          MODE5
                (1/2)
```

← F2 / ← F4

F1 →

```
* Print Mode *
MODE6          MODE7

                (2/2)
```

← F2

↓ Select mode

```
* Cut *
Cut            Yes/No +
                   Yes -
```

↓ ENTER

```
* Nozzle *
Count    -1 → 10000 +
                50 -
```

Number of endurance running cycles

↓ ENTER

```
* Nozzle *
Count              5
```

Perform endurance running

↓ ENTER or CANCEL

```
* Nozzle *
End               50
```

5.9.9. General Endurance Menu

This menu performs the general endurance running.
You can operate various driving systems according to your desired settings.
The available settings are shown below.

Setup item	Description	Parameters	Remarks
Operation speed (CW, CCW)	Sets carriage operation speed (CW and CCW).	240/300	Unit: cps
Media feed amount	Set the media feed amount per cycle	0 to 100	Unit: mm
Number of endurance running cycles	Set the number of endurance running cycles	-1 to 10000	

Notes :

- If the number of endurance running cycles is set to -1, the units continuously repeat endurance running until a key input is given from the operation panel.
- The maximum counter value for endurance running cycles is 99999999 (up to 8-digit number). If the number of cycles exceeds the maximum value, the counter is reset to 0.

* Speed CW * Speed 240 / 300 + 240 cps -	Speed (CW)

↓ ENTER

* Speed CCW * Speed 240 / 300 + 240 cps -	Speed (CCW)

↓ ENTER

* Feed Amount * 0 – 100.0 mm + 0.1 mm -	Media feed amount

↓ ENTER

* Life Count * Count -1 → 10000 + 50 -	Number of total endurance running cycles

↓ ENTER

* Total Life * Count 5	Perform endurance running

↓ ENTER or CANCEL

* Total Life * End 50

5.9.10. Endurance Running Check Menu

In this menu, you can confirm the number of endurance running cycles that have been already finished. The number of endurance running cycles is stored in NVRAM in the system. Therefore, even if a serious error occurs during endurance running, you can confirm the number of finished cycles just before the occurrence of the serious error.

* Check *		
CR Motor	50	Number of endurance running cycles (CR Motor)
PF Motor	0	Number of endurance running cycles (PF Motor)
	(1/5)	

* Check *		
Cutter	33	Number of endurance running cycles (Cutter)
Head U/D	55	Number of endurance running cycles (Head up/down)
	(2/5)	

* Check *		
Head lock	77	Number of endurance running cycles (head lock)
Wiper	77	Number of endurance running cycles (wiper)
	(3/5)	

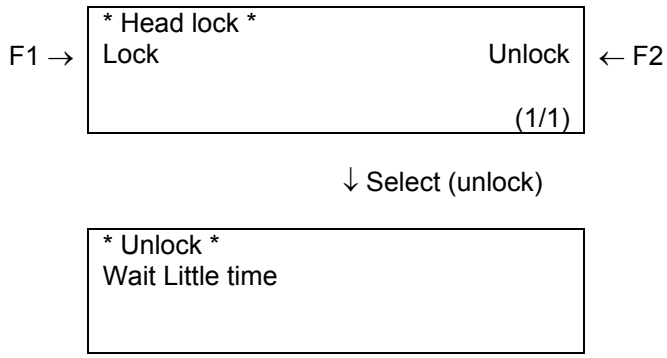
* Check *		
Pump	77	Number of endurance running cycles (pump mot)
Lever Motor	77	Number of endurance running cycles (sequential Printing)
	(4/5)	

* Check *		
Nozzle	77	
Total Life	88	Number of endurance running cycles (All)
	(5/5)	

5.10. HEAD LOCK MENU

Lock and unlock the head lock.
The following items are in the head lock menu.

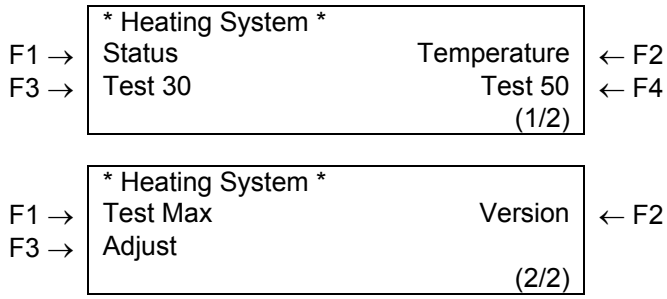
- Lock: Locks the head.
- Unlock: Releases the head lock.



5.11. HEATER SYSTEM MENU

This section describes the heater system menu.
This menu is used to evaluate the heating elements of the printer.

Initialization item	Description	Refer to
Status	This menu displays the status of the heating system.	→ Heater Status Menu
Temperature	This menu displays the real temperature of the heating elements.	→ Heater Temperature Menu
Test 30	This menu heats the temperature up to 30°C.	→ Heater Test 30 Menu
Test 50	This menu heats the temperature up to 50°C.	→ Heater Test 50 Menu
Test Max	This menu heats the temperature up to the maximum temperature.	→ Heater Test Max Menu
Version	This menu displays the version of the control heater board.	→ Heater Version Menu
Adjust	For calibration of the heaters. For future use only!	→ Heater Adjust Menu

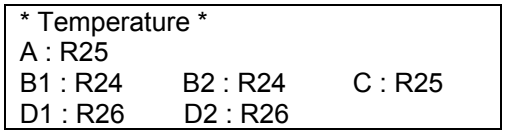


5.11.1. Heater Status Menu

This menu displays the status of the heating system.

5.11.2. Heater Temperature Menu

This menu displays the real temperature of the heating elements.



5.11.3. Heater Test 30 Menu

This menu heats the temperature up to 30°C.

```
* Test 30 *
Sending to heat system
```

The display will mention de current temperature. You can follow the heating of the heater elements on the display up to 30°C.

```
* Temperature *
A : R30
B1 : R30      B2 : R30      C : R31
D1 : R31      D2 : R31
```

5.11.4. Heater Test 50 Menu

This menu heats the temperature up to 50°C.

```
* Test 50 *
Sending to heat system
```

The display will mention de current temperature. You can follow the heating of the heater elements on the display up to 30°C.

```
* Temperature *
A : R50
B1 : R50      B2 : R50      C : R51
D1 : R50      D2 : R50
```

5.11.5. Heater Test Max Menu

This menu heats the temperature up to maximum temperature.

```
* Test MAx *
Sending to heat system
```

The display will mention de current temperature. You can follow the heating of the heater elements on the display up to 30°C.

```
* Temperature *
A : R50
B1 : R70      B2 : R70      C : R70
D1 : R50      D2 : R50
```

5.11.6. Heater Version Menu

This menu displays the version of the control heater board.

```
* Version *
Ver = 2.03
```

5.11.7. Heater Adjust Menu

Notes :

- With this menu you can calibrate the heaters. Please note that this function is for future use only.

5.12. ECO PREPARE MENU

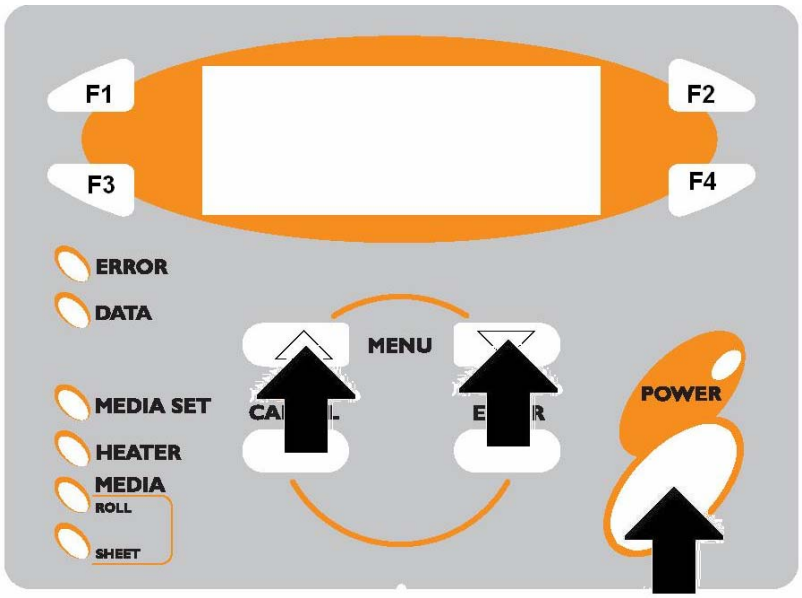
Loading ink for the first time. Please refer to the User's Guide.

5.13. MACHINE SIZE SELECT MENU

This section describes the select menu of the machine size.
Used when the Mainboard is exchanged, etc.

Step 1 : If the system is in the operation mode or the self-diagnosis menu mode, press the [POWER] key to power off the unit.

Step 2 : Press the [POWER] key while simultaneously pressing and holding the [MENU ↑] key and the [MENU ↓] key.



Step 3 : Select the machine size.

F1 → F3 →

* MachinSize *		
50inch	64inch	← F2
87inch		
- 64inch -	(1/1)	

↓ Select item

Select Finish !
Please re-starting

Step 4 : Power OFF the unit.

6. MAINTENANCE MODE

6.1. INTRODUCTION

This chapter provides information on the maintenance mode.
The maintenance mode provides the user with functions of displaying and initializing the life counters.
It is used in the manufacturing process, adjustment and maintenance.
The maintenance mode is implemented in the system firmware. All functions are available from the operation panel.

Notes :

- Refer to “Operation Panel ".

6.2. OPERATING MAINTENANCE MODE

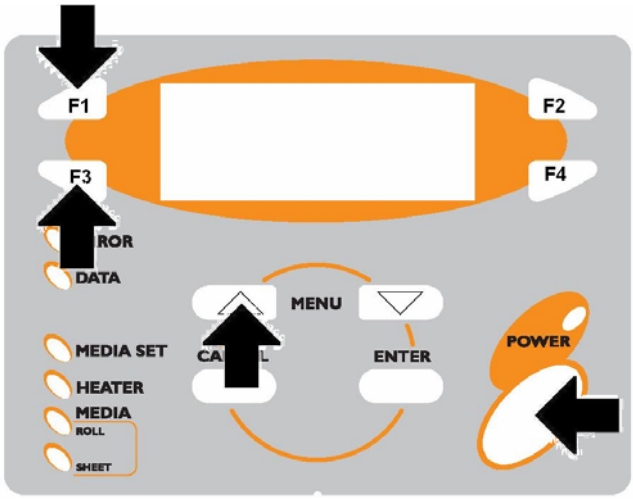
This section explains how to start up and operate the maintenance mode and provides the list of available diagnosis items.

6.2.1. Starting Up Maintenance Mode

To use the maintenance mode, you should first call up the maintenance menu on the operation panel.
The maintenance menu is completely independent of the normal operation mode and setup menu display mode. To call up the maintenance menu, follow the steps below.

Step 1 : If the system is in the operation mode or the setup menu mode, press the [POWER] key.

Step 2 : Press and hold the [F1] key, [F3] key and [MENU ↑] key simultaneously. While holding down these keys, press the [POWER] key.
The system will enter the maintenance mode and display the maintenance menu.



6.2.2. Operating Maintenance Mode

For operating the maintenance mode, refer to "Operations in Self-Diagnosis Mode".

6.3. MAINTENANCE MENU

The maintenance menu includes the following diagnosis items.

Initialization item	Description	Refer to
Counter Display Menu	This menu displays the life counters.	Counter Display Menu
Counter Initialization Menu	Initializes the service life counter.	Counter Initialization Menu
MAC address write enable menu	Performs network MAC address writing.	MAC address write enable menu

Notes :

- The MAC address write enable menu is added from Farm Ver. 1.08.

6.3.1. Counter Display Menu

This menu displays the life counters. It consists of the following diagnosis items.

Diagnosis item	Description
Rest ink 1	Displays ink consumption counter (1).
Rest ink 2	Displays ink consumption counter (2).
Rest ink 3	Displays ink consumption counter (3).
Rest ink 4	Displays ink consumption counter (4).
Rest ink 5	Displays ink consumption counter (5).
Rest ink 6	Displays ink consumption counter (6).
Rest ink 7	Displays ink consumption counter (7).
Rest ink 8	Displays ink consumption counter (8).
Cutter service life	Displays the cutter service life counter.
Number of prints	Displays the counter for the total number of prints.
Waste ink	Displays the service life counter for the waste liquid tank (right).
Cleaner	Displays the cleaning unit life counter.
CR motor	Displays the CR motor service life counter.
PF motor	Displays the PF motor service life counter.
Pump A	Displays the number of pump cycles of pump A
Pump B	Displays the number of pump cycles of pump B
Head 1 A	Displays the service life counter for nozzle A of head unit 1.
Head 1 B	Displays the service life counter for nozzle B of head unit 1.
Head 2 A	Displays the service life counter for nozzle A of head unit 2.
Head 2 B	Displays the service life counter for nozzle B of head unit 2.
Head 3 A	Displays the service life counter for nozzle A of head unit 3.
Head 3 B	Displays the service life counter for nozzle B of head unit 3.
Head 4 A	Displays the service life counter for nozzle A of head unit 4.
Head 4 B	Displays the service life counter for nozzle B of head unit 4.

Notes :

- All life counters are displayed in decimal number.
- For 87-inch specifications, the head 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B are added.

* Counter Display *	
Ink remain 1	00000000
Ink remain 2	00000000
	(1/12)

* Counter Display *	
Ink remain 3	00000000
Ink remain 4	00000000
	(2/12)

* Counter Display *	
Ink remain 5	00000000
Ink remain 6	00000000
	(3/12)

* Counter Display *	
Ink remain 7	00000000
Ink remain 8	00000000
	(4/12)

* Counter Display *	
CutterLife	00000000
PrintNumber	00000000
	(5/12)

* Counter Display *	
WasteInk	00000000
Cleaner	00000000
	(6/12)

* Counter Display *	
CR Motor	00000000Mdot
PF Motor	00000000Mdot
	(7/12)

* Counter Display *	
Pump A	00000000
Pump B	00000000
	(8/12)

* Counter Display *	
Head 1A	00000000Mdot
Head 1B	00000000Mdot
	(9/12)

* Counter Display *	
Head 2A	00000000Mdot
Head 2B	00000000Mdot
	(10/12)

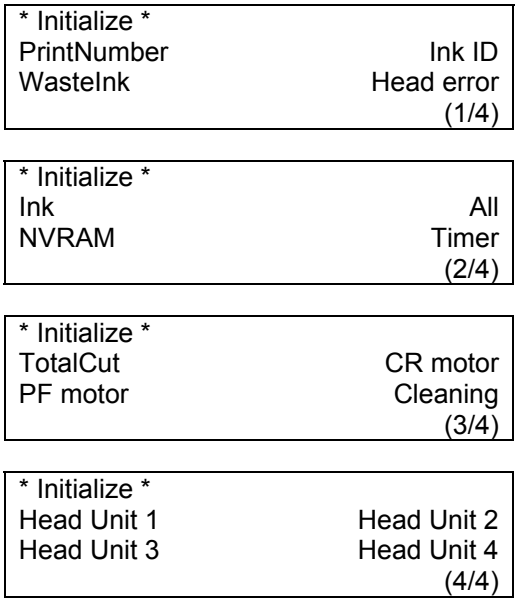
* Counter Display *	
Head 3A	00000000Mdot
Head 3B	00000000Mdot
	(11/12)

* Counter Display *	
Head 4A	00000000Mdot
Head 4B	00000000Mdot
	(12/12)

6.3.2. Counter Initialization Menu

This menu initializes the life counters. The parameters that can be initialized in this menu are as follows.

Diagnosis item	Description
Number of prints initialization	Initializes the total number of printing counter.
Ink initialization	Initializes the ink capacity counter.
Waste ink initialization	Initializes the waste fluid tank service life counter.
Head error reset	Resets critical trouble errors due to over-current flowing the head.
Ink ID mask initialization	Resets the ink ID mask.
Total initialization	Initializes the service life counter.
NVRAM initialization	Initializes NVRAM.
Timer initialization	Initializes the timer.
Cutter initialization	Initializes the cutter cumulative counter.
CR motor initialization	Initializes the CR motor service life counter.
PF motor initialization	Initializes the PF motor service life counter.
Cleaning initialization	Initializes the cleaning wiper service life counter.
Head unit 1 initialization	Initializes the head 1 nozzle service life counter.
Head unit 2 initialization	Initializes the head 2 nozzle service life counter.
Head unit 3 initialization	Initializes the head 3 nozzle service life counter.
Head unit 4 initialization	Initializes the head 4 nozzle service life counter.



6.3.3. MAC address write enable menu

It could happen that the computer cannot make connection with the Rockhopper II printer. If this is the case, the MAC address of the Rockhopper II printer has probably been set to zero or incorrect.

To insert the MAC address into the Rockhopper II printer, please follow the instructions mentioned below.

Notes :

- For the MAC address, a unique number is assigned for each unit. Do not use this function except when intending to recover following deletion of the MAC address.
- Please note that this procedure is only available onto the Rockhopper II printers with following firmware version or higher.
  - Rockhopper II : V2.00

6.3.3.1. Request correct MAC address

Step 1 : Remove the Right Cover.

Step 2 : Remove the Ethernet Board Cover.

Step 3 : Onto the installed card you can see a sticker with a 'FM0 number'.

Notes :

Write down this number 'FM0 xxxxxx'. Important are the 6 digits 'x'.

Step 4 : Based on this number Mutoh Europe's service department can provide you the correct MAC address for your printer.

Step 5 : Reinstall the covers.

6.3.3.2. Insert the MAC address into the printer

Step 1 : Power on the unit in a special mode. Press the [POWER] key to power ON the unit, while simultaneously holding the [F1], [F3] and [Menu ↑] key.

Step 2 : The unit will start up in special mode. Following message will appear on the display.

```
* Counter *
Indication                InitMenu
MACaddress
```
F3 →

Step 3 : Press the [F3] key to select the option 'MAC Address'. Following message will appear on the display.

```
* MAC address *
Input Password
```

Step 4 : Press the [F2] key.

Step 5 : Press the [F3] key.

Step 6 : Press the [F1] key.

Step 7 : Press the [F4] key.

Step 8 : The password has been inserted. Use the [F1], [F2], [F3] and [F4] key to insert the MAC address.

Step 9 : Press the [ENTER] key to confirm.

Step 10 : Press the [POWER] key to power OFF the unit.

6.3.4 Head Voltage

In this menu, you can change the head voltage compensation value from -9 to +2.5. The default value is 0.

If your Rockhopper does not print perfectly in 360x360, change the value to optimize your printquality.

7. ADJUSTMENTS

7.1. INTRODUCTION

Adjustments and adjustment procedures required when replacing parts are explained in this chapter.

Notes :

- Refer to “Jig and tool list ".

7.2. ADJUSTMENT

The adjustments required when replacing parts are explained below.
When adjusting or replacing maintenance parts shown in the table below, a printing adjustment is required using the auto-diagnostic function on the printer. Refer to the table below while making adjustments.

Replaced or adjusted part	Adjustment order	Adjustment	Refer to
Print head	1	Head rank input (including initial filling)	→ Head rank input menu
	2	Head nozzle check	→ Head Nozzle Check Menu
	3	Head angle check	→ Head Slant Check Menu
	4	Head precision adjustment	→ Head precision adjustment
	5	Repeatability adjustment	→ Repeatability Adjustment Menu
	6	CW adjustment	→ CW Adjustment Menu
	7	Test Print	→ Test print menu
	8	Head unit lifespan count reset	→ Parameter Initialization Menu
Mainboard assembly	1	Parameter backup	→ Parameter backup
	2	Firmware installation	→ Firmware installation
	3	Machine size select	→ Machine size select menu
	4	Backup parameter installation	→ Backup parameter installation procedure
	5	Media sensor sensitivity adjustment	→ Media sensor sensitivity adjustment
	6	Head rank input	→ Head rank input menu
	7	Head nozzle check	→ Head Nozzle Check Menu
	8	Head angle check	→ Head Slant Check Menu
	9	Repeatability adjustment	→ Repeatability Adjustment Menu
	10	CW adjustment	→ CW Adjustment Menu

	11	Band feed correction	→ Band Feed Correction Menu (X Length)
	12	Top and bottom adjustment	→ Top & bottom adjustment menu
	13	Rear sensor position adjustment	→ P_REAR sensor position adjustment menu
	14	Test Print	→ Test print menu
CR motor assembly	1	CR deceleration belt tension adjustment	→ Steel belt tension adjustment
	2	Repeatability adjustment	→ Repeatability Adjustment Menu
	3	Top and bottom adjustment	→ Top & bottom adjustment menu
	4	Test Print	→ Test print menu
	5	Initializing CR motor history	→ Parameter Initialization Menu
PF motor assembly	1	PF deceleration belt tension adjustment	→ PF deceleration belt tension adjustment
	2	Band feed correction	→ Band Feed Correction Menu (X Length)
	3	Top and bottom adjustment	→ Top & bottom adjustment menu
	4	Rear sensor position adjustment	→ P_REAR sensor position adjustment menu
	5	Test Print	→ Test print menu
	6	Initializing PF motor history	→ Parameter Initialization Menu
P_EDGE sensor assembly	1	Media sensor sensitivity adjustment	→ Media sensor sensitivity adjustment
	2	Top and bottom adjustment	→ Top & bottom adjustment menu
Cover sensor assembly	1	Cover sensor assembly position adjustment	→ Cover sensor adjustment
PF_ENC assembly	1	PF_ENC inspection	→ Encoder Menu
	2	Band feed correction	→ Band Feed Correction Menu (X Length)
	3	Top and bottom adjustment	→ Top & bottom adjustment menu
	4	Test Print	→ Test print menu
Sub-platen	1	Cutter adjustment	→ Cutter adjustment
	2	Cutter endurance operation check	→ Cutter Endurance menu
T fence	1	CR encoder inspection	→ Encoder Menu
	2	Repeatability adjustment	→ Repeatability Adjustment Menu
	3	Top and bottom adjustment	→ Top & bottom adjustment menu
	4	Test Print	→ Test print menu
CR slave pulley	1	Steel belt tension adjustment	→ Steel belt tension adjustment
Cutter holder assembly	1	Cutter adjustment	→ Cutter adjustment
	2	Cutter endurance operation check	→ Cutter Endurance menu

Carriage assembly	1	Head height adjustment	→ Head height adjustment
	2	Media sensor sensitivity adjustment	→ Media sensor sensitivity adjustment
	3	Continuous printing endurance operation check	→ Head Nozzle Check Menu → Sequential Printing Endurance Menu
	4	Head nozzle check	→ Head Nozzle Check Menu
	5	Head angle check	→ Head Slant Check Menu
	6	Head precision adjustment	→ Head precision adjustment
	7	Repeatability adjustment	→ Repeatability adjustment Menu
	8	CW adjustment	→ Repeatability Adjustment Menu
	9	Top and bottom adjustment	→ P_REAR sensor position adjustment menu
	10	Test Print	→ Test print menu

7.3. PARAMETER BACKUP

This chapter explains the different types of parameter backup methods.
The different backup parameters related to the operation of the printer are recorded on the NVRAM (Flash-ROM or EEPROM) installed on the Mainboard.
There are the following types of backup parameters.

- Panel setting values
- Mechanism adjustment values
- Mainboard adjustment values

Notes :

- For the backup parameter, the Mainboard adjustment values cannot be changed or deleted.

If it is necessary to replace the Mainboard while performing maintenance work, make a parameter backup. You can shorten some of the adjustment procedures by matching the printer mechanism with the new Mainboard.

Caution :

Before making a parameter backup, make sure that the power source to the printer is OFF. If the operation is performed with the power source on, the Mainboard could be damaged and the data may not be installed correctly.

7.3.1. Tools required for work

The following tools are required for the parameter backup procedure.

- Flash memory card

Notes :

- Refer to ‘Jig and tool list’.
- Use the memory card written in "Procedure for creating backup parameters" for parameter backup of the unit only.

7.3.2. Procedure for creating backup parameters

This section explains the procedure for recording backup parameters from the Mainboard assembly onto a memory card.
Use the following procedure to create backup parameters.

Important :

- **Before replacing parts, be sure to perform the following operations.**
  - **Turn the machine power OFF.**
  - **Remove the product's electrical plug from the socket. Otherwise, you may suffer electric shock or the machine's electric circuits may be damaged.**
- **Disconnect all cables from the machine. Not doing so could cause damage to the printer.**

Step 1 : Remove the memory cover.

Step 2 : Install the memory card for parameter backup into the memory card connector slot (J104) on the mainboard assembly.

Notes :

- Install the memory card so that its front is toward the inside of the printer.

Step 3 : Turn the power to the printer on.
- After all of the lamps on the operation panel light up, the LED display on the panel displays "PRINTER→CARD".

Step 4 : Press the [ENTER] key on the operation panel.
- The LED display on the operation panel displays "P→C Started".
- Backup parameter creation begins.

Step 5 : If the backup parameter has been created correctly, "P→C Completed" is displayed on the operation panel.

Step 6 : Turn off the power source to the printer.

Step 7 : Remove the memory card for parameter backup.

Notes :

- If you do not have backup memory card, output "Adj. Variable" in "Sample Printing Menu". Required parameter is output.
- For the panel setting value, output "Setup" in the Operation Manual. Maintenance history is not printed.

7.3.3. Backup parameter installation procedure

The following is the procedure for installing the backup parameter from the memory card into the new Mainboard assembly.
Use the following procedure to install backup parameters.

(1) When using a flash memory card

Step 1 : Install the memory card for the backup into the memory card connector slot for the new Mainboard assembly.

Notes :

- Install the memory card so that its front is toward the inside of the printer.

Step 2 : Turn the power to the printer on.
- After all of the lamps on the operation panel come on, the LED display on the panel displays "PRINTER→CARD".

Step 3 : Press either the [MENU ↑] key or [MENU ↓] key on the operation panel.
- "CARD→PRINTER" is displayed on the LED display on the operation panel.

Step 4 : Press the [ENTER] key on the operation panel.
- The LED display on the operation panel displays "C→P Started".
- Backup parameter creation begins.

Step 5 : If the backup parameter has been created correctly, "C→P Completed" is displayed on the operation panel.

Step 6 : Turn off the power source to the printer.

Step 7 : Remove the memory card for parameter backup.

Step 8 : Reinstall the memory cover

(2) When not using a flash memory card

The settings should be input by the panel.
Input following the procedures below.

Step 1 : Install the firmware according to "Firmware installation".

Step 2 : Follow the instructions in "Machine size select menu" to select the machine size.

Step 3 : Initialize NVRAM according to "Counter Initialization Menu".

Step 4 : Follow the instructions in "Parameter Update Menu" and refer to the printed adjustment variable to enter following setting value.

- Head voltage
- Printing position alignment (Bi-D)
- CW adjustment
- Media feed distance
- Mechanical parameter (Top margin, Bottom margin, Side margin, P_REAR sensor position)
- Ink parameter (Initial ink charge flag)
- Ink ID mask
- Serial number

7.4. FIRMWARE INSTALLATION

The procedure for installing firmware is explained below.
The programs (firmware) that control the operation of the printer are recorded on the NVRAM (Flash-ROM) installed on the Mainboard.
Install firmware when performing the following maintenance operations.

- When replacing the Mainboard assembly
- When upgrading firmware

Caution :

Before installing firmware, be sure that the power to the printer is turned off.
Performing these operations with the power on could result in damage to the Mainboard assembly or cause the data to not be installed correctly.

7.4.1. Tools required for work

The following tools are required to install firmware.
Flash memory card or compatible computer

Notes :

- Refer to “Jig and Tool list”.

7.4.2. Installation procedure

The procedure for installing firmware is explained below.
Use the following procedure to install firmware.

Important :

- **Before replacing parts, be sure to perform following operations.**
  - **Turn the machine power OFF.**
  - **Remove the product's electrical plug from the socket. Otherwise, you may suffer electric shock or the machine’s electric circuits may be damaged.**
- **Disconnect all cables from the machine. Not doing so could cause damage to the printer.**

(1) When using a flash memory card

Step 1 : Remove the memory cover.

Step 2 : Install the memory card for the installation of firmware into the memory card connector slot (J104) of the Mainboard assembly.

Notes :

- Install the memory card so that its front points towards the inside of the printer.

Step 3 : Turn the power of the printer ON.

Step 4 : Firmware installation starts.

Step 5 : Check if the buzzer sounded and whether the firmware was installed correctly.

Step 6 : Turn off the power source to the printer.

Step 7 : Remove the memory card for firmware installation.

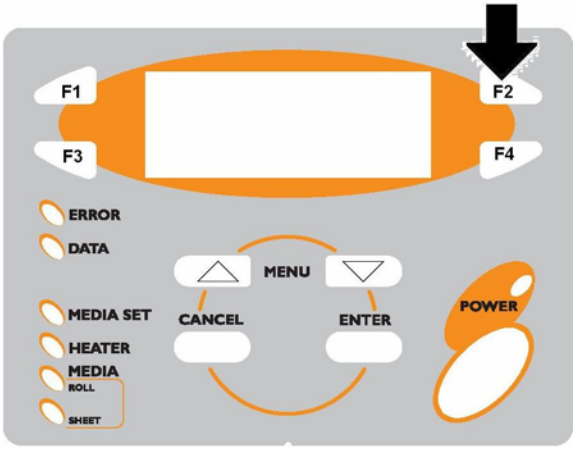
Step 8 : Reinstall the memory cover.

(2) When using a computer

Step 1 : Using a printer cable, connect the PC to the printer.

Step 2 : Turn the power of the printer ON.
- All lamps will flash for an instant.

Step 3 : Press the [F2] key on the operation panel within 1 second.
- The message "Ready to load" is displayed and the firmware install mode takes effect.



Step 4 : Send new firmware data by MS-DOS copy command etc. (e.g. "COPY /B rh2.04.jfl LPT1")

Firmware installation will take about 60 seconds. The following messages will appear in order on the LED display on the operation panel during installation.
- "Loading"
- "Erasing"
- "Copying"
- "Comparing"
- "End"

Step 5 : Check if the buzzer sounded and whether the firmware was installed correctly.

Step 6 : Power the unit OFF.

Important :

After installation of the firmware onto the Rockhopper II 4 heater, you must upgrade the heater system board.

(3) Updating the heater system board (4 heater printers ONLY!).

To update the heater system board of a Rockhopper II 4 heater printer, please follow the instructions mentioned below.

Important :

- **Before updating the heater system board, make sure you already installed the firmware into the Rockhopper II 4 heater printer.**

Step 1 : Make sure the printer is OFF.

Step 2 : Press simultaneously the [CANCEL] and the [ENTER] key while turning the printer ON.

Step 3 : The display will mention the following message.

F2 →

```
* User Setting *
Rem Update
Ver Update
                (1/1)
```

Step 4 : Press the [F2] key.

Step 5 : The heater system board is now being updated. The display will mention the following messages.

- Erasing sectors
- Wait flash programming

Step 6 : At the end the display will mention the following message.

```
Card Update
    DO NOT POWER DOWN
      Version Installed
```

Step 7 : Press the [CANCEL] key.

Step 8 : Power OFF the unit.

Step 9 : Updating the heater system board is completed.

7.5. STEEL BELT TENSION ADJUSTMENT

The procedure for adjusting the steel belt tension is explained below.
This section explains the procedure for adjusting steel belt tension. When removing/installing the steel belt, adjust its tension.

7.5.1. Tools required for work

The following tools are required when adjusting the tension of the steel belt.

- Tension gauge: max. 2.0 N (200 g)
- Steel belt tension attachment 2: for gauge diameter 2mm (0.08in.) or less

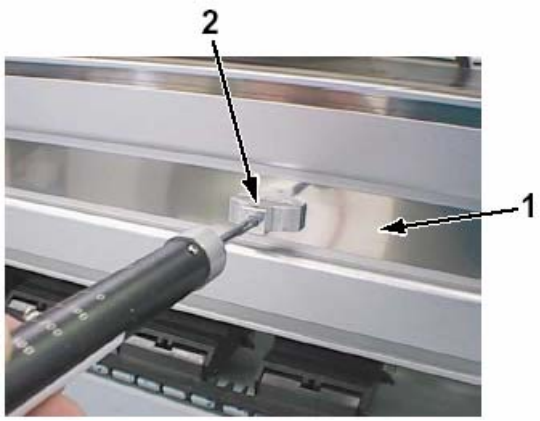
Notes :

- Refer to “jig and Tool list”.

7.5.2. Adjustment Procedure

Use the following procedure to adjust the tension of the steel belt.

Step 1 : Place the tension gauge at the center of the steel belt.



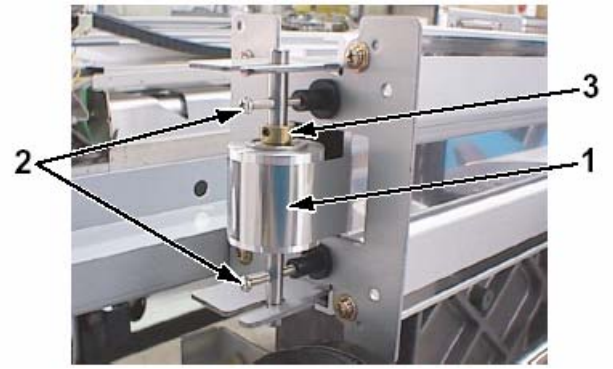
1 = steel belt	2 = Tension gauge

Notes :

The regulation values for the tension of the steel belt are shown below.

- 50 inch, 64 inch specifications: 1.0 N ± 0.1 N (100 g ± 10 g)
- 87 inch specifications: 0.9 N ± 0.1 N (90 g ± 10 g)

Step 2 : If the tension of the steel belt is not within the range of regulated values, adjust the steel belt tension screws.



1 = Steel belt	2 = Steel belt tension screw
3 = CR slave pulley	

Step 3 : Move the CR cursor to the left and right once or twice. Adjust the CR driven pulley until the upper and lower margins are identical.

Caution :

If the tension is not equivalent across the entire belt, it could snap during operation.

7.6. PF DECELERATION BELT TENSION ADJUSTMENT

The procedure for adjusting the tension of the PF deceleration belt is explained below.
When removing the PF motor or removing/installing the PF deceleration belt, adjust the tension of the PF deceleration belt.

7.6.1. Tools required for work

The following tools are required to adjust the tension of the PF deceleration belt.
Tension gauge: max. 50 N (5 kgf)

Notes :

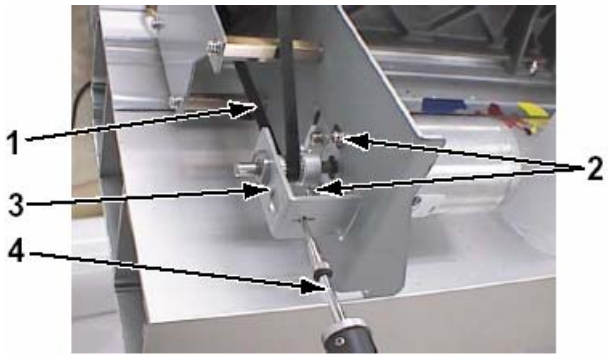
- Refer to “Jig and tool list”

7.6.2. Adjustment Procedure

Use the following procedure to adjust the tension of the PF deceleration belt.

Step 1 : Loosen the 2 screws fixing the PF motor installation board.

Step 2 : Install the tension gauge on the PF motor installation board and pull it in the direction shown on the figure below.



1 = PF deceleration belt	2 = Screws (M3x6) fixing the PF motor installation board
3 = PF motor installation board	4 = Tension gauge

Notes :

- The regulated value of the tension for the PF deceleration belt is 34.32 N ±10 % (3,5 kgf ±10 %).

Step 3 : Tighten the 2 screws fixing the PF motor installation board.

7.7. HEAD PRECISION ADJUSTMENT (SLANT)

This section explains the procedure for adjusting the head angle.
When replacing the head assembly, use the following procedure to adjust the head angle and head forward/rear position.

7.7.1 Head slant adjustment

7.7.1.1 For a 4 head machine

Step 1 : Start the self-diagnostic function.

Notes :

- Refer to “Self-Diagnosis Function”

Step 2 : Select "Adj:HeadSlant".

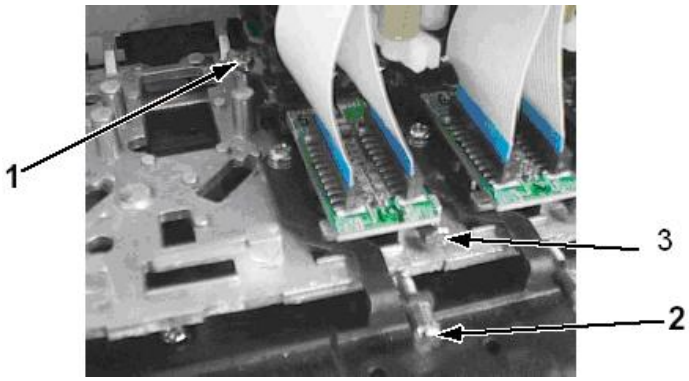
Step 3 : Print "Slant" pattern.
If dotted lines on pattern CW and CCW are not a straight line, which you can check with a magnifying glass (enlargement of at least 10), please go to step 4.

Notes :

When the printing pattern is printed, you will only see lines, and no notifications of ink channels. The head sequence shown below.

4 head model: 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B

Step 4 : Loosen the screw (with one turn) fixing the head stationary plate.



No.	Part
1	Screw (M2.5x5) fixing the head stationary plate
2	Angle adjustment screw
3	Front and back adjustment screw

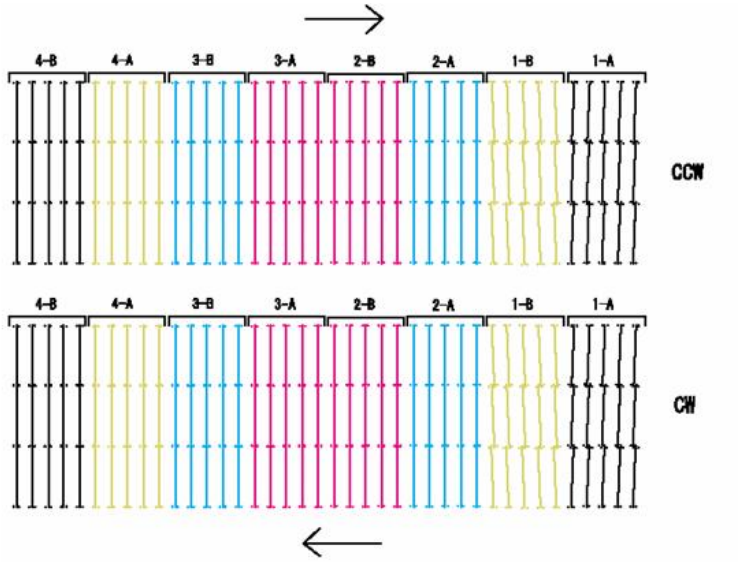
Step 5 : Make adjustments until amount of CW and CCW offset are identical.

Notes :

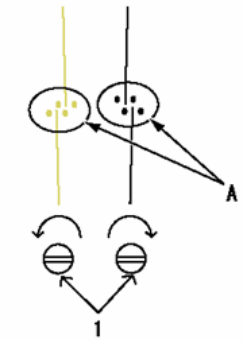
- In theory, the alignment of CW and CCW should be identical. But in practice, it is almost impossible to become a perfect alignment. When there is a slight difference between CW and CCW, be sure the heads are well seated.
- In case you only print uni directional, adjust the CW till it is aligned perfectly.
- In case you print bi-directional, and CW and CCW cannot be aligned more perfectly. Divide the fault equally.

Notes :

- When printing the pattern, the head identifications 1A, 1B etc, are not printed. Analyse the pattern as shown below. Be sure to have five lines for each color.



How to adjust



What to become

No.	Part
1	Angle adjustment screw

Step 6 : Tighten the screw fixing the head stationary plate.

Repeat step 1 to 6 until the adjustment is correct for all heads.

7.7.1.2 For a 8 head machine

Step 1 : Start the self-diagnostic function.

Notes :

- Refer to “Self-Diagnosis Function”

Step 2 : Select "Adj:HeadSlant".

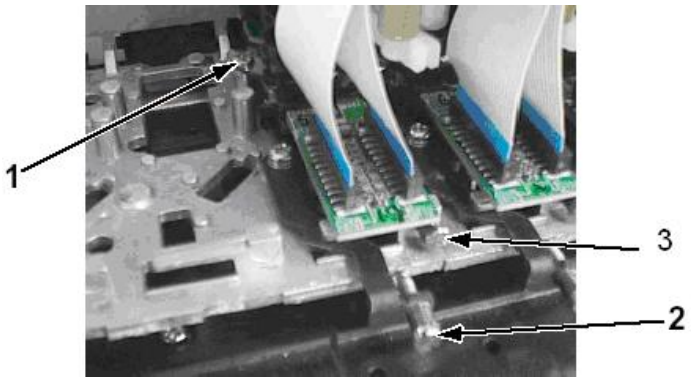
Step 3 : Print "Slant" pattern.
If dotted lines on pattern CW and CCW are not a straight line, which you can check with a magnifying glass (enlargement of at least 10), please go to step 4.

Notes :

When the printing pattern is printed, you will only see lines, and no notifications of ink channels. The head sequence shown below.

8 head model: 3A, 3B, 1A, 1B, 2A, 2B, 4A, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B

Step 4 : Loosen the screw (with one turn) fixing the head stationary plate.



No.	Part
1	Screw (M2.5x5) fixing the head stationary plate
2	Angle adjustment screw
3	Front and back adjustment screw

Step 5 : Make adjustments until amount of CW and CCW offset are identical.

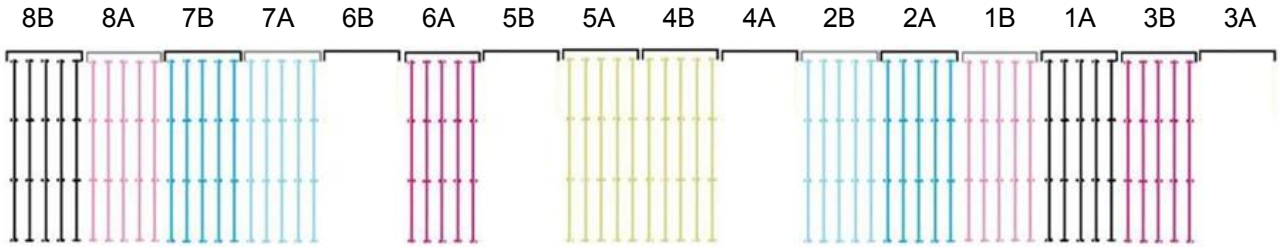
Notes :

- In theory, the alignment of CW and CCW should be identical. But in practice, it is almost impossible to become a perfect alignment. When there is a slight difference between CW and CCW, be sure the heads are well seated.

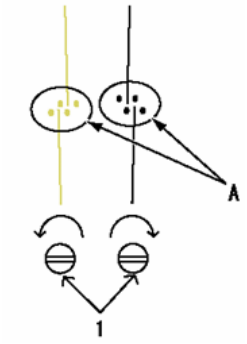
- In case you only print uni directional, adjust the CW till it is perfect aligned.
- In case you print bi-directional, and CW and CCW cannot be aligned more perfectly. Divide the fault equally.

Notes :

- When printing the pattern, the head identifications 1A, 1B etc, are not printed. Analyse the pattern as shown below. Be sure to have five lines for each color.



Adjustable head slant



Adjusted head slant

No.	Part
1	Angle adjustment screw

Step 6 : Tighten the screw fixing the head stationary plate.
Repeat step 1 to 6 until the adjustment is correct for all heads.

7.7.2. Front and back of head adjustment

7.7.2.1 For a 4 head machine

To perform a Head Front/Back Adjustment, please follow the steps mentioned below.

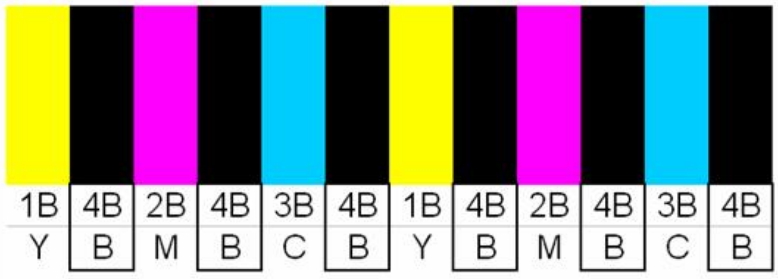
Step 1 : In diagnostic mode, go to [Adjust : Head Slant].

Step 2 : Press the [F2] key for F&B (front and back) adjustment.

	* HeadSlant *	
F1 →	Slant	F&B ← F2
F3 →	Check	End ← F4

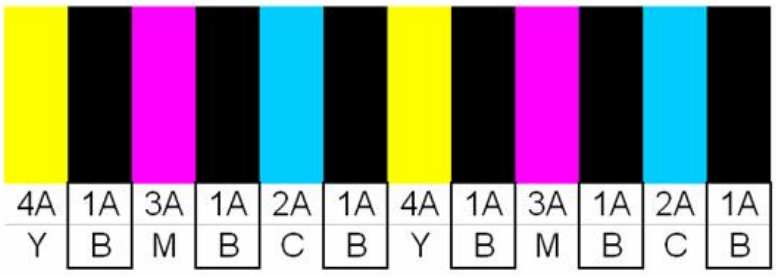
Step 3 : Print out [Front/Back] pattern. First pattern A with 1A as reference is printed, then pattern B with 4B as reference and finally A+B.

A+B



B

4B is the reference head

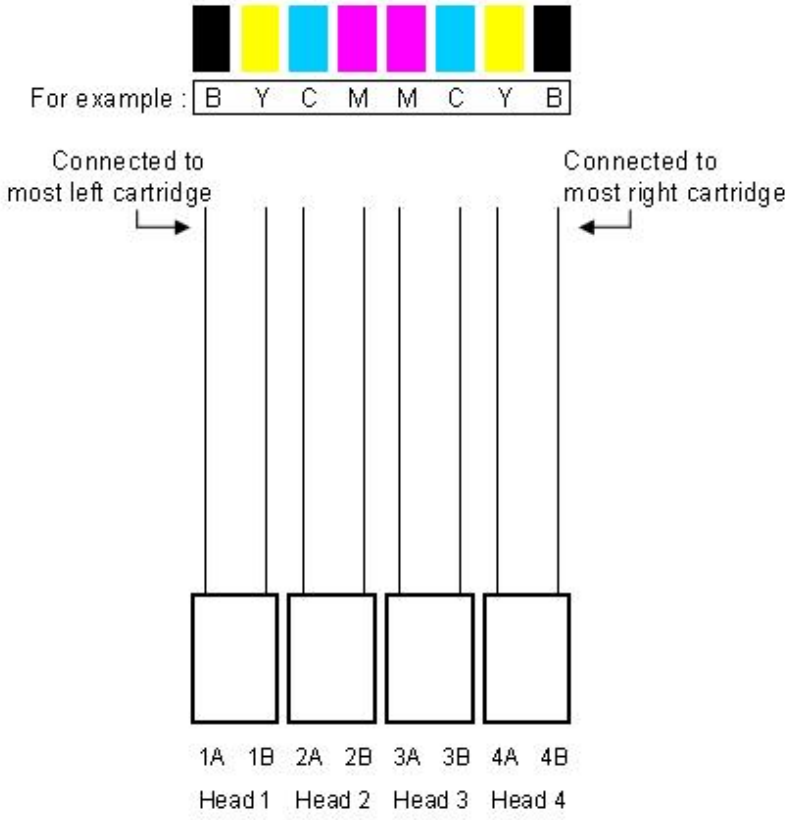


A

1A is the reference head

Notes :

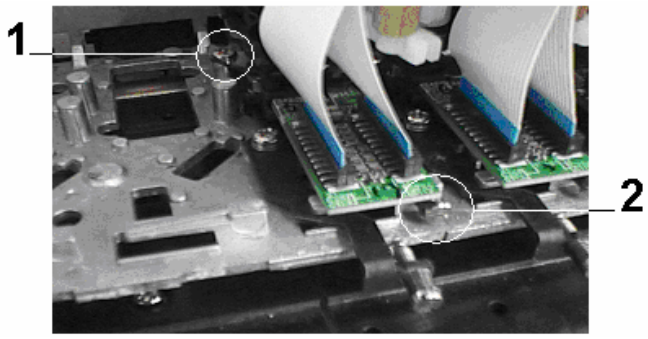
To help you identify the print heads on the test pattern please refer to the diagram below.


For example : B Y C M M C Y B
Connected to most left cartridge
Connected to most right cartridge
1A 1B 2A 2B 3A 3B 4A 4B
Head 1 Head 2 Head 3 Head 4

Know you see, 1A is Black, 1B is Yellow, etc (in our color combination).

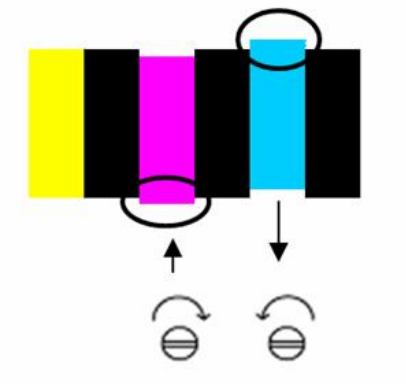
Step 4 : Check if all nozzles are in 1 row by using a magnifying glass with an enlargement of at least 10. If not, please proceed to step 5.

Step 5 : Loosen the screw with 1 turn, which secures the Head Fixing Plate.

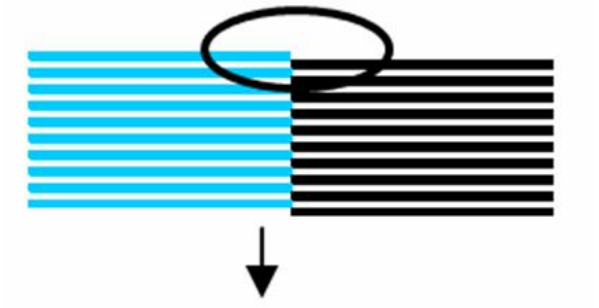


No.	Part
1	Head Fixing plate securing screw
2	Front/Back Adjustment Screw

Step 6 : When the nozzles are not in one row, adjust the head front/back position by moving the Head Front/Back Adjustment Screw the manner shown below. First adjust nozzle row A (1A, 2A, 3A, 4A). When adjusted perfectly, nozzle row B should automatically be adjusted. But in practice this isn't always a fact. When your determine a small misalignment after adjusting A well, readjust again until all nozzles of row A and B are perfectly aligned.



This pattern you will see when using a magnifying glass.



NOTE :

We only give an example for one colour combination. Please refer to "Operation Procedure Labels" in the Maintenance Manual where you can find the other possible colour combinations.

Step 7 : Tighten the screw which secures the Head Fixing Plate.

Step 8 : Repeat step 1 to 7 until the adjustment is correct.

7.7.2.2. For a 8 head machine

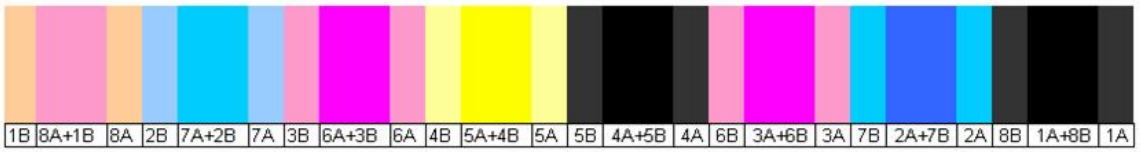
To perform a Head Front/Back Adjustment, please follow the steps mentioned below.

Step 1 : In diagnostic mode, go to [Adjust : Head Slant].

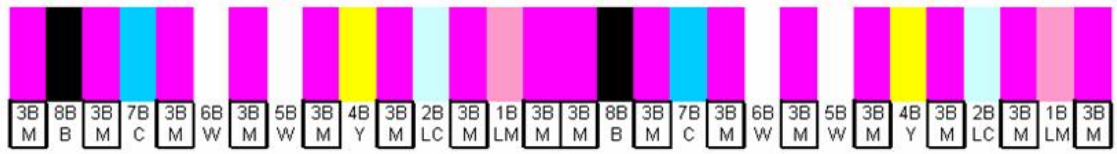
Step 2 : Press the [F2] key for F&B (front and back) adjustment.

	* HeadSlant *	
F1 →	Slant	F&B ← F2
F3 →	Check	End ← F4

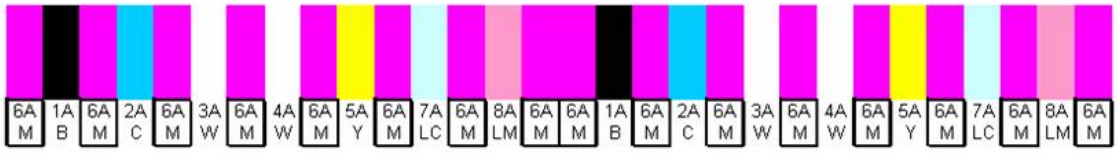
Step 3 : Print out [Front/Back] pattern.



A+B



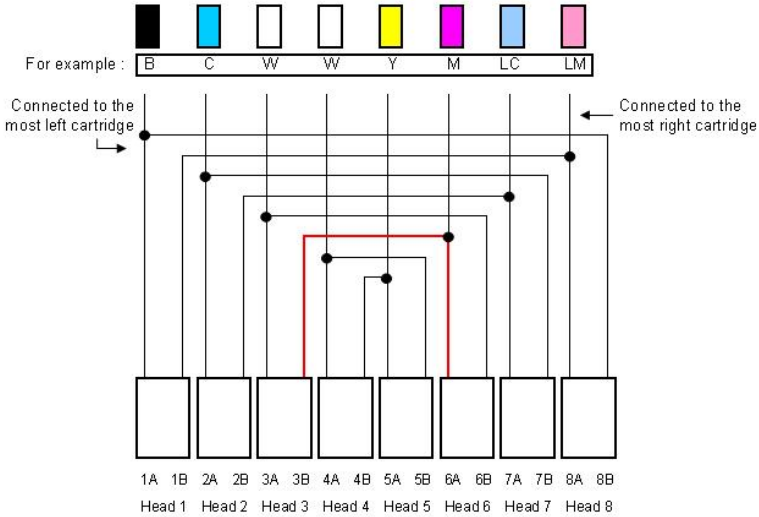
B
3B is the reference



A
6A is the reference

NOTE:

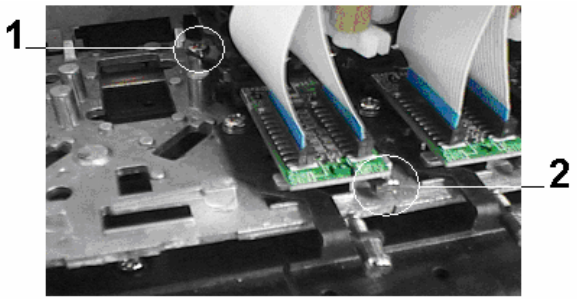
To help you identify the print heads on the test pattern please refer to the diagram below.


For example :
B C W W Y M LC LM
Connected to the most left cartridge
Connected to the most right cartridge
1A 1B 2A 2B 3A 3B 4A 4B 5A 5B 6A 6B 7A 7B 8A 8B
Head 1 Head 2 Head 3 Head 4 Head 5 Head 6 Head 7 Head 8

Now you can see, 1A is black. 1B is LM (follow the line till you reach the junction. Then go up to Light Magenta

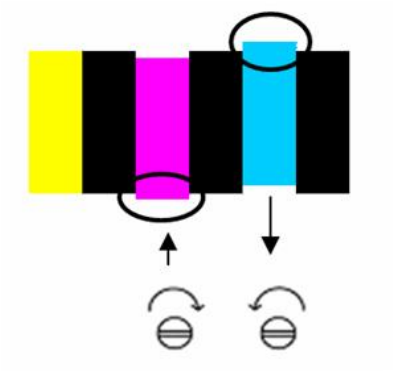
Step 4 : Check if all nozzles are in 1 row by using a magnifying glass with an enlargement of at least 10. If not, please proceed to step 5.

Step 5 : Loosen the screw with 1 turn, which secures the Head Fixing Plate.

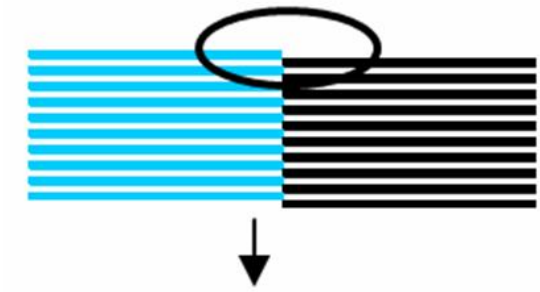


No.	Part
1	Head Fixing plate securing screw
2	Front/Back Adjustment Screw

Step 6 : When the nozzles are not in one row, adjust the head front/back position by moving the Head Front/Back Adjustment Screw the manner shown below. First adjust nozzle row A (1A, 2A, 3A, 4A). When adjusted perfectly, nozzle row B should automatically be adjusted. But in practice this isn't always a fact. When your determine a small misalignment after adjusting A well, readjust again until all nozzles of row A and B are perfectly aligned.



This pattern you will see when using a magnifying glass.



NOTE :

We only give an example for one colour combination. Please refer to "Operation Procedure Labels" in the Maintenance Manual where you can find the other possible colour combinations.

Step 7 : Tighten the screw which secures the Head Fixing Plate.

Step 8 : Repeat step 1 to 7 until the adjustment is correct.

Notes :

- Please note that you also have a third menu in head slant. Notably the check menu. With this pattern, it is possible to compare every front and back position of every head to each other

7.8. REPEATABILITY ADJUSTMENT (BI-DIRECTIONAL)

To perform a Repeatability Adjustment, please follow the steps mentioned below.

Step 1 : Start the self-diagnostic function.

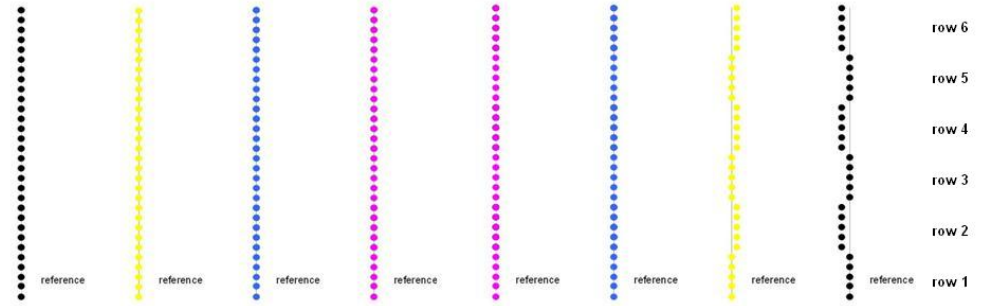
Notes :

- Refer to “Self-Diagnosis Function".

Step 2 : Select "Adj:Bi-D".

Step 3 : Print a repeatability pattern.

Step 4 : The odd rows (with each 5 dots) are the references. So the even rows should be adjusted (use a magnifying with an enlargement of at least 10)
When you want to move the even rows (with dots) to the right, you have to increase (+) the value.
For example: The value is 20, adjust it to 30 for example
The value is -20, adjust it to -10 for example
When you want to move the even rows (with dots) to the left, you have to decrease (-) the value.
For example: The value is 20, adjust it to 10 for example
The value is -20, adjust it to -30 for example



4B 4A 3B 3A 2B 2A 1B 1A

Notes :

- For 87-inch specifications, the head 5-A, 5-B, 6-A, 6-B, 7-A, 7-B, 8-A, 8-B are added.

Step 5 : Adjust reciprocation per head height.

- #1: Head height LOW
- #2: Head height MIDDLE
- #3: Head height HIGH

Notes :

- In the event that all parts of unit do not line up due to part or assembly precision error, make adjustments until everything in the area around center lines up in a straight line.

7.9. CW ADJUSTMENTS (UNI-DIRECTIONAL)

To perform CW adjustments, please follow the steps mentioned below.

Step 1 : Start the self-diagnostic function.

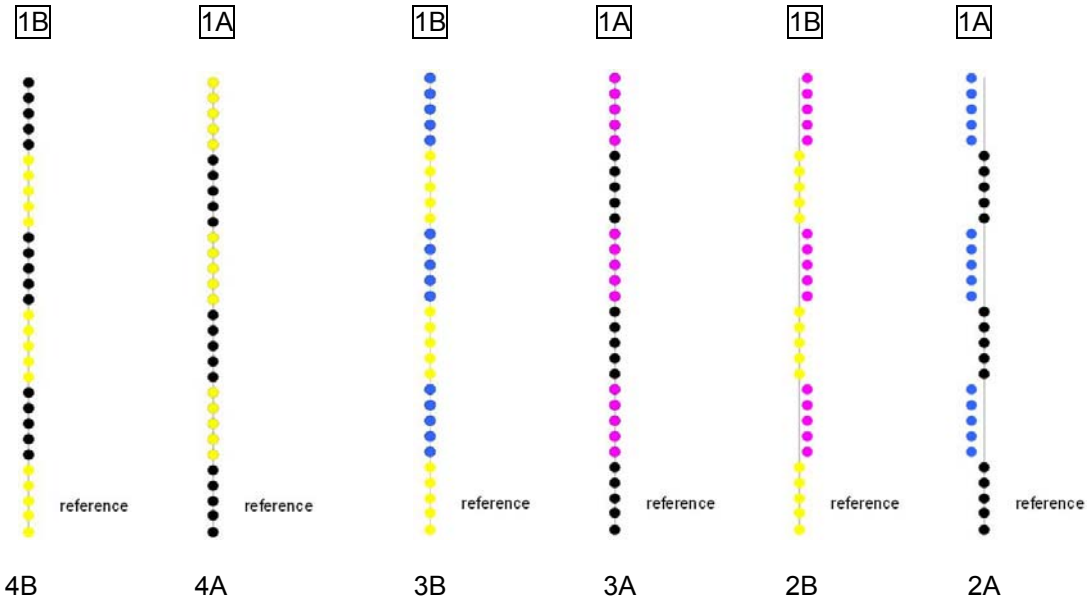
Notes :

- Refer to “Self-Diagnosis Function".

Step 2 : Select "Adj:Uni-D".

Step 3 : Print a CW adjustment pattern.

Step 4 : The odd rows (alternately 1A and 1B) are the references. So the even rows (2A, 2B, 3A, 3B, 4 A and 4B) should be adjusted (use a magnifying with an enlargement of at least 10)
When you want to move the even rows (with dots) to the right, you have to increase (+) the value.
For example: The value is 20, adjust it to 30 for example
The value is -20, adjust it to -10 for example
When you want to move the even rows (with dots) to the left, you have to decrease (-) the value.
For example: The value is 20, adjust it to 10 for example
The value is -20, adjust it to -30 for example



Notes :

- For 87-inch specifications, the head 5-A, 5-B, 6-A, 6-B, 7-A, 7-B, 8-A, 8-B are added.

Notes :

- In the event that all parts of unit do not line up due to part or assembly precision error, make adjustments until everything in the area around center lines up in a straight line.

7.10. CR DECELERATION BELT TENSION ADJUSTMENT

This section explains the procedure for adjusting the tension of the CR deceleration belt.
When removing/installing the CR deceleration belt, such as when removing the CR motor, adjust the tension of the CR deceleration belt.

7.10.1. Tools required for work

The following tools are required to adjust the tension of the CR deceleration belt.
- Tension gauge: max. 50 N (5 kgf)

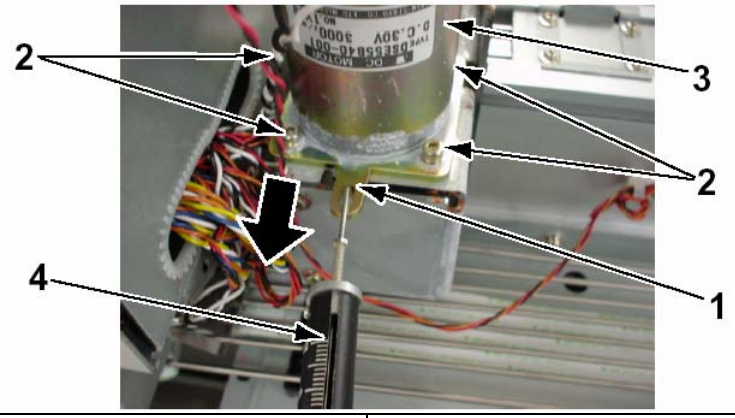
Notes :

- Refer to “Jig and Tool List ".

7.10.2. Adjustment Procedure

Use the following procedure to adjust the tension of the CR deceleration belt.

Step 1 : Loosen the 4 hexagon socket head cap screws fixing the CR motor installation board.



1 = CR motor installation board	2 = Hexagon socket head cap screw
3 = CR motor assembly	4 = Tension gauge

Step 2 : Install the tension gauge on the PF motor installation board.

Step 3 : Pull the tension gauge in the direction of the arrow shown on the figure above.

Notes :

- The regulated value of the tension for the CR deceleration belt is 34.32 N ± 10 % (3,5 kgf ± 10 %).

Step 4 : Tighten the 4 hexagon socket head cap screws fixing the CR motor installation board.

7.11. COVER SENSOR ADJUSTMENT

This section explains the procedure for adjusting the cover sensor.
When replacing the cover sensor assembly or removing/installing the front cover, use this procedure to adjust the cover sensor.

Step 1 : Start the self-diagnostic function.

Notes :

- Refer to “Self-Diagnosis Function ".

Step 2 : Select "Check:Test" on the self-diagnostic menu.

Step 3 : In the inspection menu, select "Check : Check".

Step 4 : Select "Sensor:Etc." on the sensor menu.

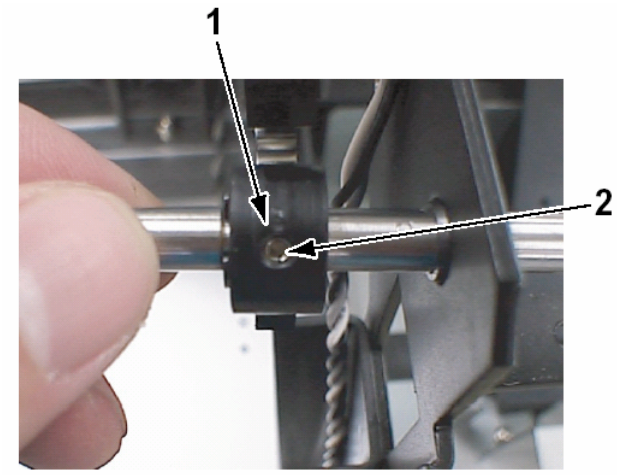
Step 5 : Open and close the front cover assembly and make sure the dimension between the media guide and the front cover end is 21 mm, and the display in the operation panel is switched as follows.

Front cover	Operation panel display
Open	Sensor: open
Closed	Sensor: closed

Notes :

- Use a block gauge to measure the height of the front cover when opening it.

Step 6 : If the opening height of the front cover and the information displayed on the operation panel are different, adjust the installation position of the sensor cam.



1 = Sensor cam	2 = Set screw

Step 7 : Use step 5 to check the display on the operation panel once more.

7.12. HEAD HEIGHT ADJUSTMENT

This section explains the procedure for adjusting the head height.
If CR cursor assembly is changed, adjust head height.

7.12.1. Tools required for work

The following tools are required when adjusting the head height.
CR gap check jig

Notes :

- Refer to “Jig and Tool List".

7.12.2. Adjustment Procedure

Perform the head height adjustment following the procedures below.

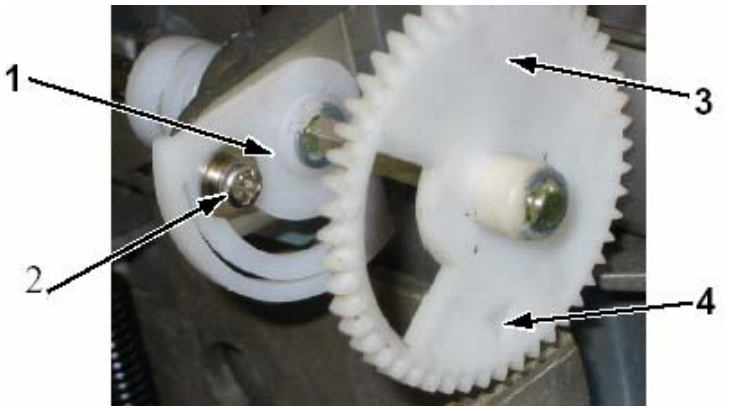
Step 1 : Unlock the head lock according to "Head Lock Menu".

Step 2 : Move the CR cursor on the platen.

Step 3 : Remove the head cover according to "Removing the head cover".

Step 4 : Point slide gear mark down so that heads move into low position.

Step 5 : Loosen the screws (2, one on the right, one on the left) that fasten the head U/D eccentric shaft lever.



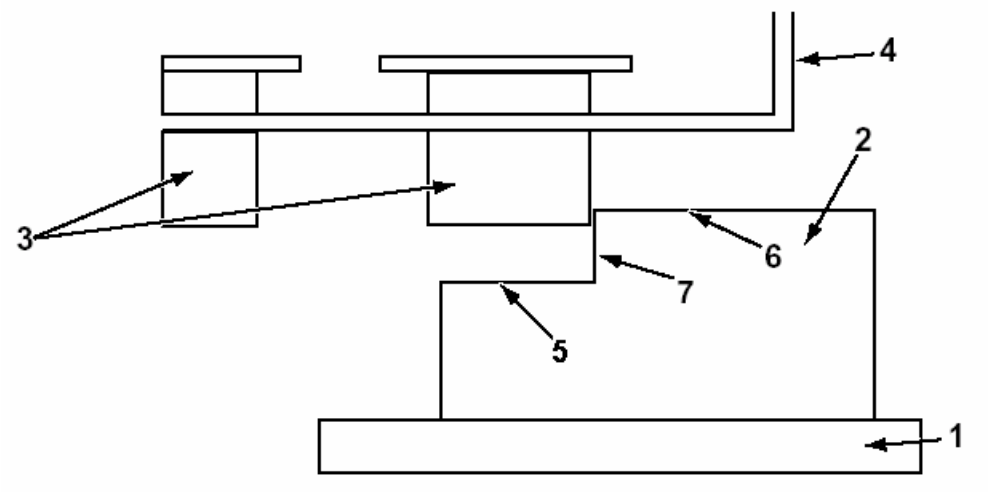
1 = Head U/D eccentric shaft lever	2 = Screws fixing the head U/D eccentric shaft lever
3 = Slide gear	4 = Slide gear triangular mark

Step 6 : Put the CR gap adjusting jig on the platen.

Step 7 : Move the CR cursor so that 1.2mm side of adjustment jig makes contact with the side of head.

Step 8 : Adjust head U/D eccentric shaft lever so that CR gap adjustment jig can move freely.

Step 9 : Perform CR cursor right/left adjustment.



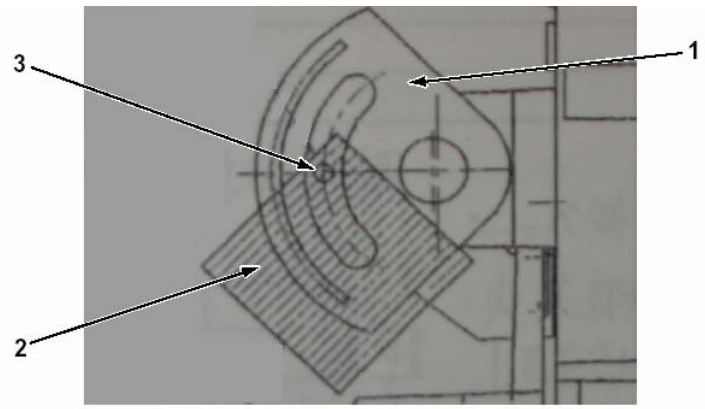
1 = Platen	2 = CR gap check jig
3 = Print head	4 = CR cursor
5 = Height 1.2 mm	6 = Height 1.3 mm
7 = CR gap adjustment jig 1.2 mm side	

Step 10 : Fasten the screws (2, one on the right, one on the left) that fasten the head U/D eccentric shaft lever.

Step 11 : Apply non reflective tape to the head U/D eccentric shaft lever as shown in the following printing:

Notes :

- Completely cover the screw heads with non reflective tape. If non reflective tape cannot be applied to chosen location, the head slide sensor may not detect screw head properly.



1 = Head U/D eccentric shaft cover	2 = Nonreflective tape
3 = Screw fixing the head U/D eccentric shaft cover	

7.13. MEDIA SENSOR SENSITIVITY ADJUSTMENT

This section explains the procedure for adjusting the sensitivity of the media sensor.
When replacing the P_EDGE sensor assembly or Mainboard assembly, adjust the media sensor.

Notes :

- Pay attention to the following points when adjusting the media sensor.
  - This should be performed in an area where sun light and illumination do not influence the sensor.
  - The front cover and Y rail cover should be installed when performing the work.
  - When making adjustments, hold the media by hand or the media hold lever so that the media stays still on the sensor.
- If the media is lifted off, the accuracy of the sensor may be affected.
  - A non-conductive type screw driver should be used when adjusting the control on the Mainboard assembly.
- Otherwise, a short circuit may result if the driver contacts the metal parts, such as electronics parts on the Mainboard assembly or the frame.

7.13.1. Tools required for work

The following tools are required for adjusting the P_EDGE sensor.
Reference media: Double coated media (recommended media)

Notes :

- Refer to “Jig and Tool List".

7.13.2. Adjustment Procedure

Perform the adjustment following the procedures below.

Notes :

- The adjustment values are displayed by a decimal number from the firmware version 1.08 onwards. Perform the adjustment after checking if the right firmware version has been installed.

Notes :

- The adjustment values are as follows.
  - HIGH level (with media) A/D value
  - In hexadecimal number : D8 to DF (H)
  - In decimal number : 216 to 223 (H)
  - LOW level (without media) A/D value
  - In hexadecimal number : 30 to 0 (H)
  - In decimal number : 48 to 0 (H)

(1) HIGH level (with media) adjustment of the A/D value

Step 1 : Set the standard media.

Step 2 : Select "Check : Head Lock" in the self-diagnosis menu.

Notes :

- Refer to “Self-Diagnosis Function ".

Step 3 : Release the head lock.

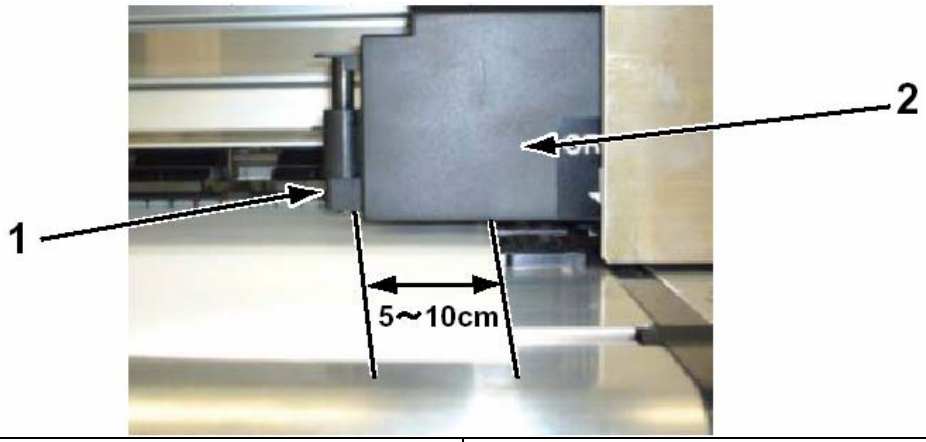
Step 4 : Check if the installation angle of the P_EDGE sensor is 15°.

Step 5 : In the inspection menu, select "Check : Check".

Step 6 : Display "Sensor : PaperEdgeAD".

Step 7 : Open the front cover.

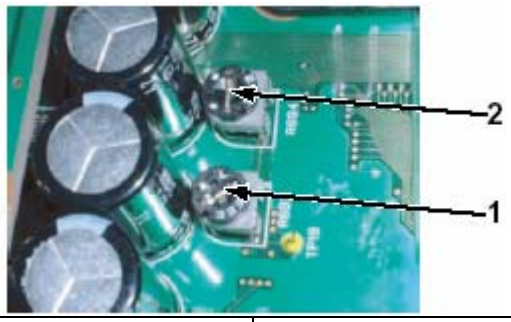
Step 8 : Move the carriage so that the dimension between the right edge of the standard media and the cutter is 5 to 10 cm.



1 = Razor Blade	2 = Carriage

Step 9 : Adjust the P_EDGE sensor control shown in the following figure so that the values displayed in the operation panel become the adjustment value.

- Control R693: Rough adjustment
- Control R694: Fine adjustment

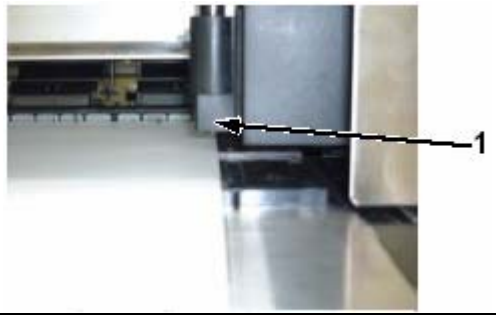


1 = Volume R693	2 = Volume R694

(2) LOW level (without media) A/D value check

Step 1 : Adjust the A/D value of the HIGH level following the "(1) HIGH level A/D value adjustment" procedure.

Step 2 : Align the cutter and the right edge of the standard media by moving the carriage.



1 = Razor Blade

Notes :

- Perform the following if the A/D values of the edge sensor are not the adjustment value.

1) Checking the installation angle (about 15°) of the P_EDGE sensor assembly
2) Replacing the P_EDGE sensor assembly
3) Re-inspecting the Mainboard assembly

Step 3 : Make sure that the values displayed in the operation panel are as shown below.

- In hexadecimal number : 30 to 0
- In decimal number : 48 to 0

7.14. CUTTER ADJUSTMENT

This section explains the procedure for adjusting the cutter.
When replacing the sub-platen, replacing the solenoid assembly, or removing/installing media guide F, use this procedure to adjust the cutter.

Step 1 : Confirm if the media has been cut correctly.

Notes :

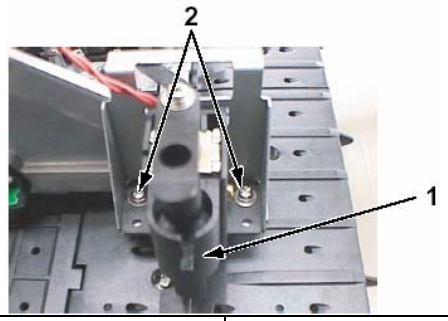
- Refer to “Cutter Endurance menu".

Step 2 : If media guide F has been installed at an angle, adjust it.

Notes :

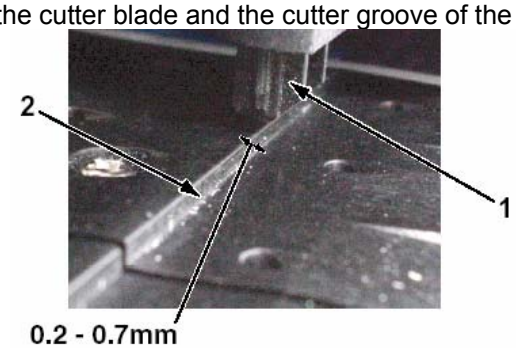
- Refer to “Removing media guide F".

Step 3 : Loosen the screw fixing the cutter holder.



1 = Cutter holder	2 = Screws (M3x6) fixing the cutter holder

Step 4 : Slide the cutter holder forward and backward as shown in the following figure so that the dimension between the cutter blade and the cutter groove of the sub-platen is 0.2 to 0.7 mm.



1 = Cutter holder	2 = Cutter groove of the sub-platen

Step 5 : Tighten the screw fixing the cutter holder.

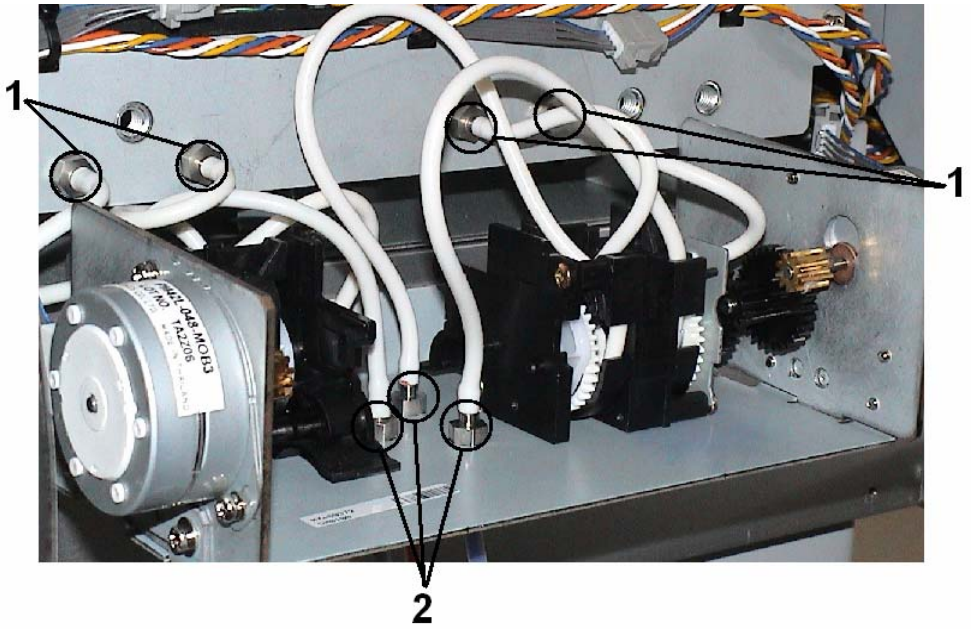
Step 6 : Insert paper into unit. Manually place an indentation into paper.

Step 7 : Confirm that the distance between paper indentation and cutter groove is between 0.2 and 0.7mm.

7.15. PUMP TUBING LAYOUT FOR PUMP ASSEMBLY

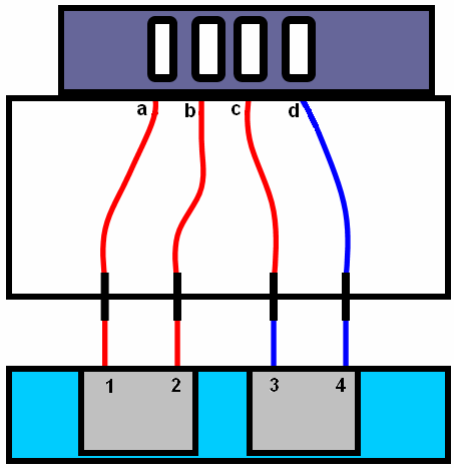
7.15.1 Pump tubing layout - Rockhopper 4 heater

(1) For 50 or 64 inch spec



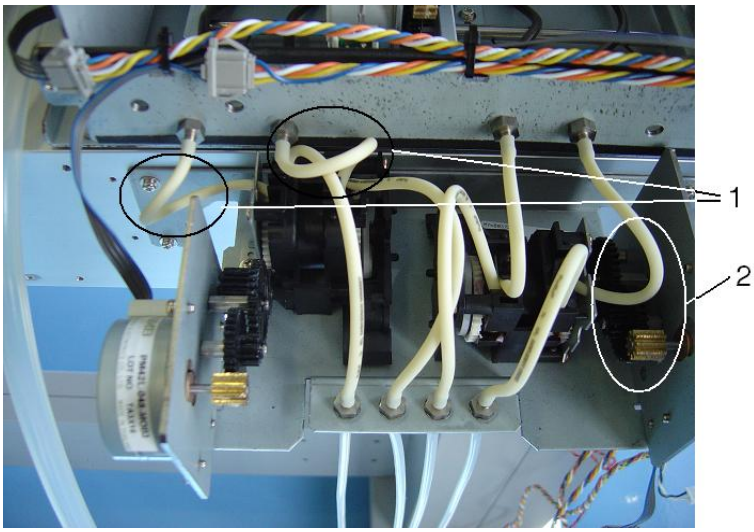
1 = connection to the head caps	2 = waste tube connection

50” or 64” Rockhopper II 4 heater



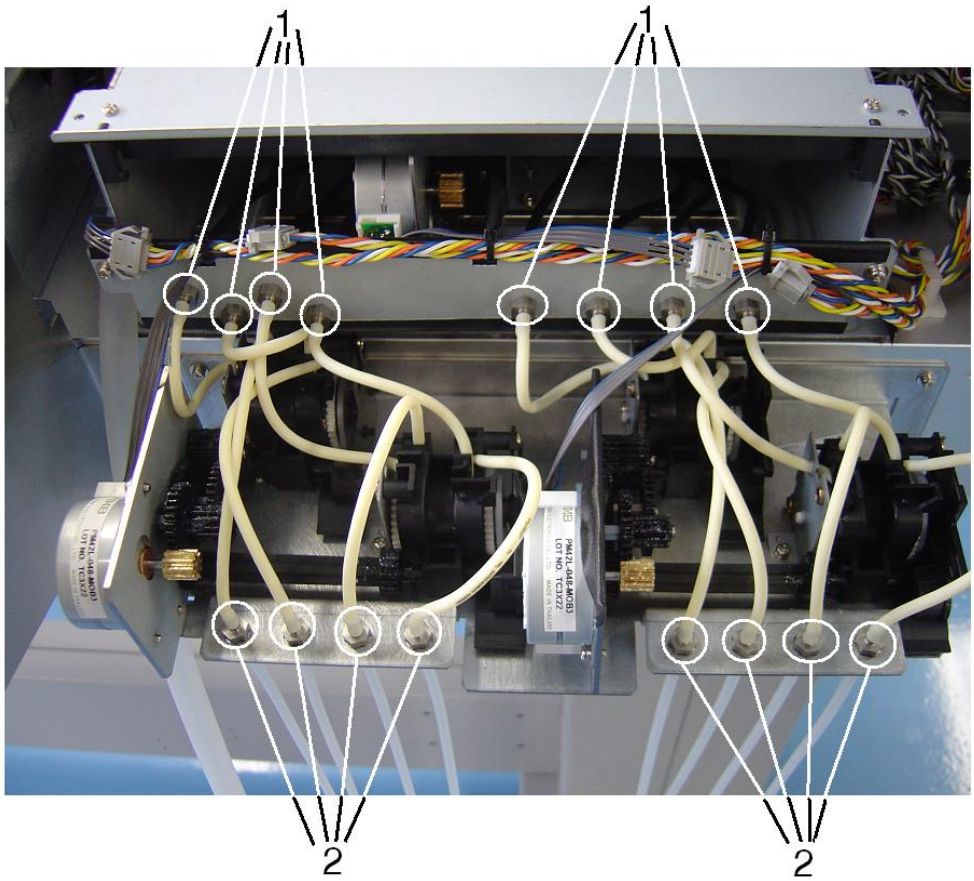
Notes :

1. Please be careful, when replacing the tubings, it is possible to have kinks in the tubings. Please avoid this by turning the tubing to the left or the right at the head connection and/or waste tube connection.
2. Also be careful the tubings do not touch or get stuck in the gears.



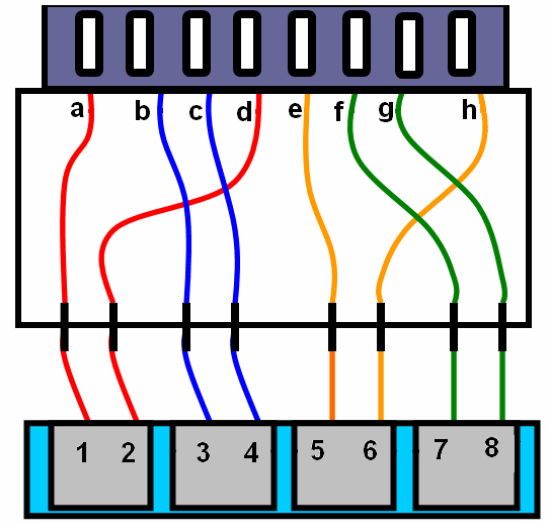
1	Critical tubings
2	Gears

(2) For 87 inch spec



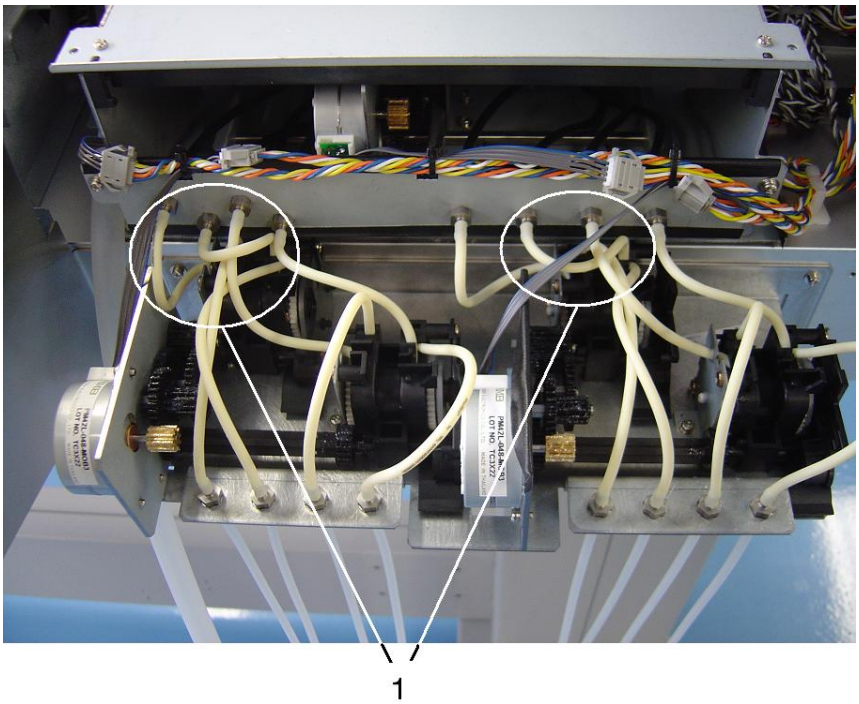
1 = connection to the head caps	2 = waste tube connection

87” Rockhopper II 4 heater



Notes :

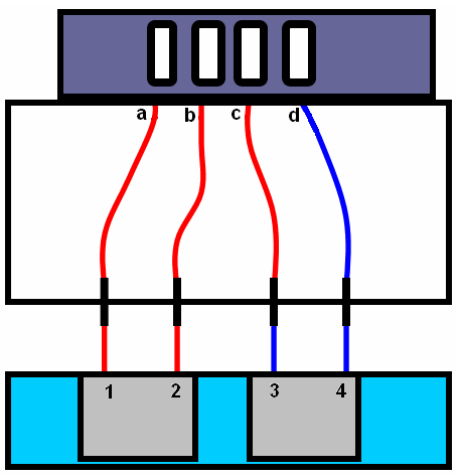
1. Please be careful, when replacing the tubings, it is possible to have kinks in the tubings. Please avoid this by turning the tubing to the left or the right at the head connections and/or waste tube connections



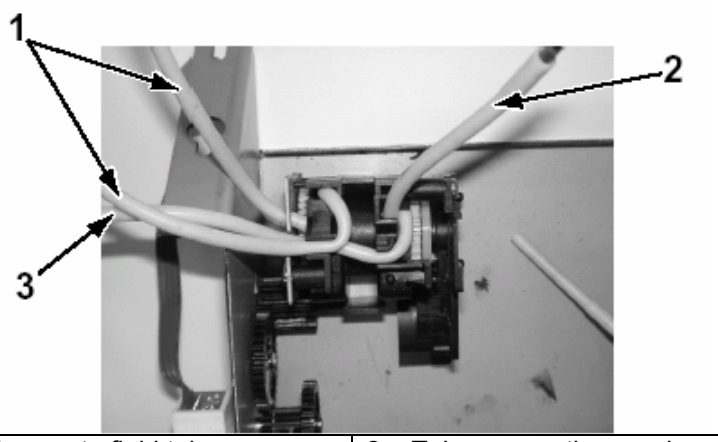
1	Critical tubings

7.15.2. Pump tubing layout - Rockhopper 2 heater

(1) For 50 or 64 inch spec

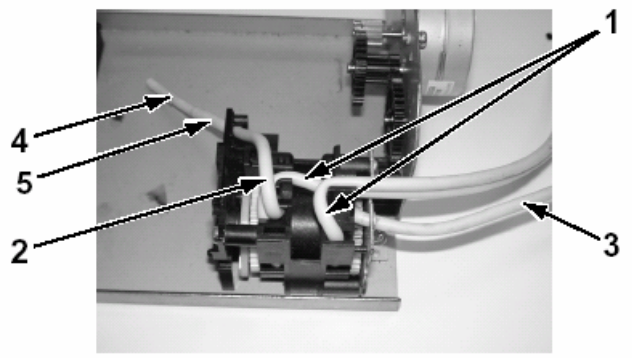
50” or 64” Rockhopper II 2 heater


Step 1 : Connect the tubing in the manner shown in the figure below.



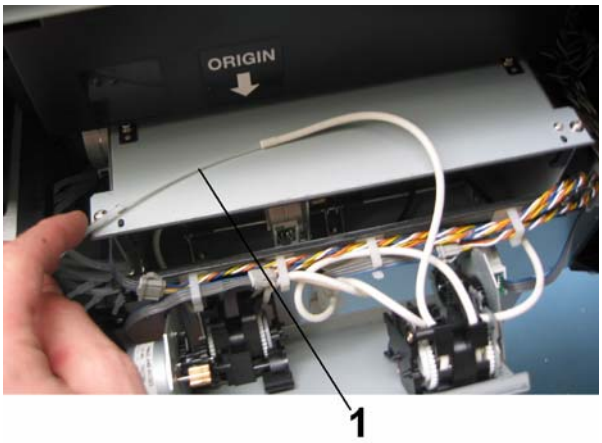
1 = Tube connecting to the waste fluid tube	2 = Tube connecting cap b
3 = Tube connecting to cap a	

Step 2 : Use a linking tube to connect the new-part pump tube (DF-43951) to the tube connecting cap 2.



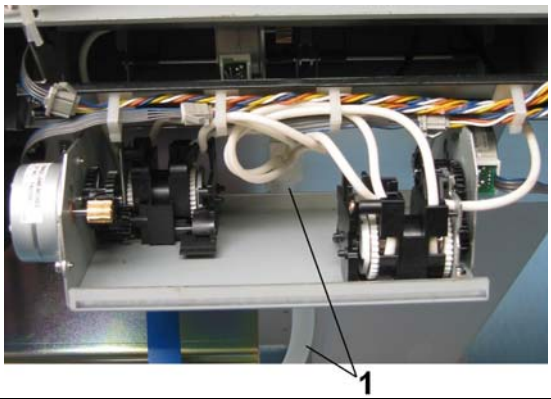
1 = Tube connecting to waste fluid side	2 = Tube connecting to cap c
3 = Tube connecting to cap d	4 = Newly-added pump tube (DF-43951, length = 40 mm)
5 = 2 tube for linking	

Step 3 : Insert into the waste fluid tubes from the pumps a piece of tube (DF-43951; 15 cm).



1 = piece of tube (15 cm)

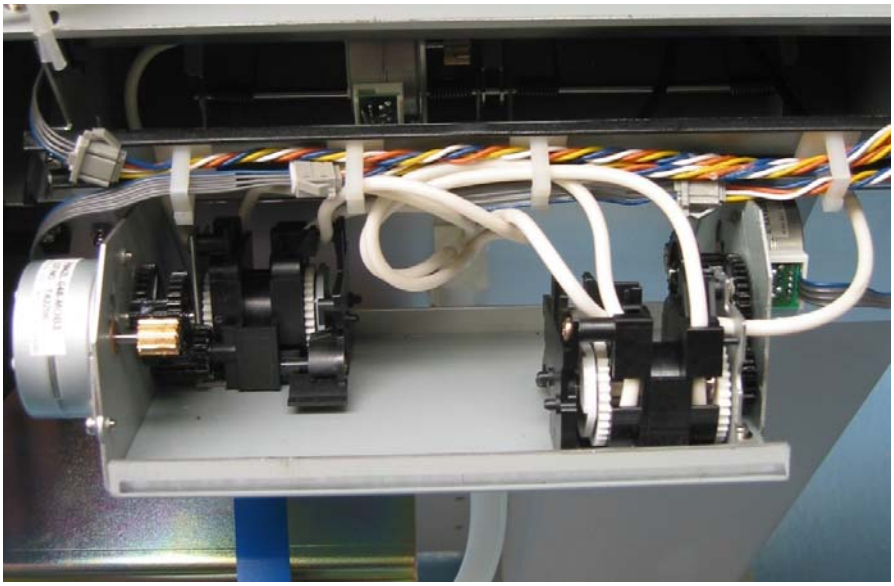
Step 4 : Bundle the waste fluid tubes in the large waste fluid tube.



1 = large waste fluid tube

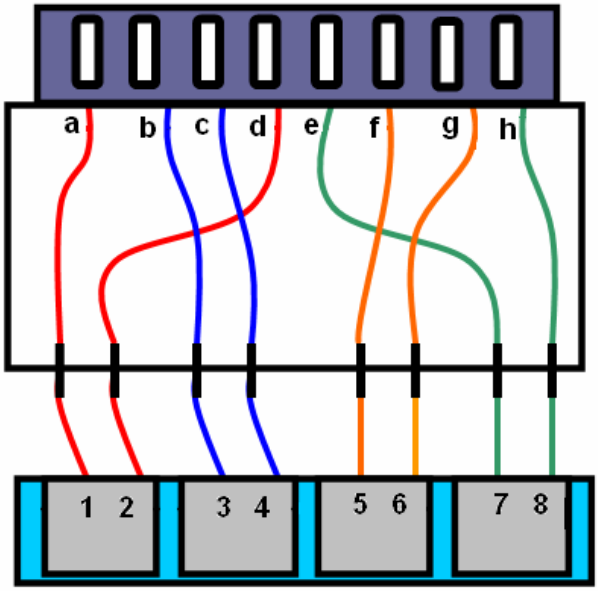
Step 5 : Bundle the connectors together in the locking wire saddle.

Step 6 : Bundle the remaining tubes, cables and connectors together in the manner shown in the figure below.

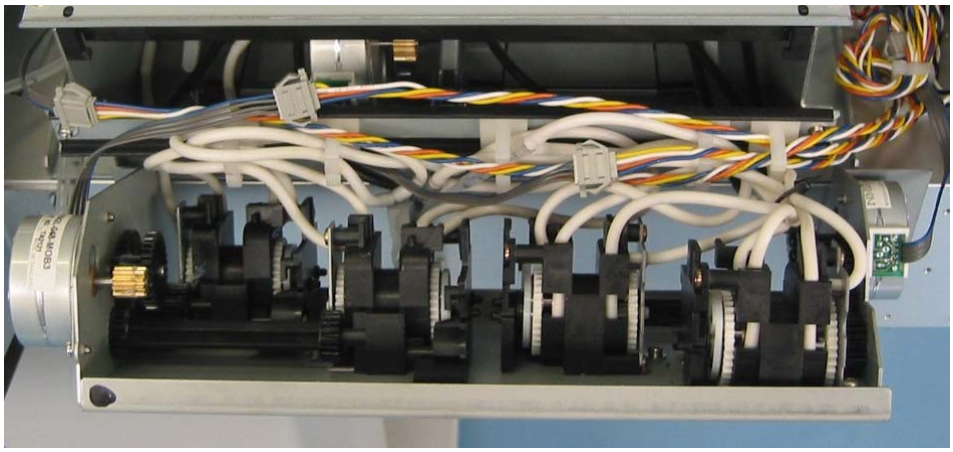


(2) For 87 inch spec

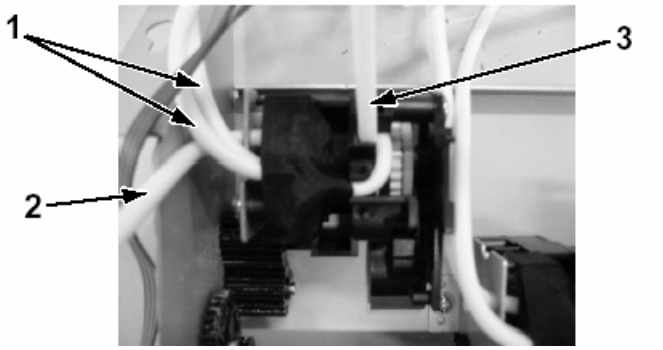
87" Rockhopper II 2 heater



Step 1 : Waste fluid tube E and an ink tube joining tube are added between fluid tube A and the pump 4 tube fitting that groups together the waste fluid side tubes.

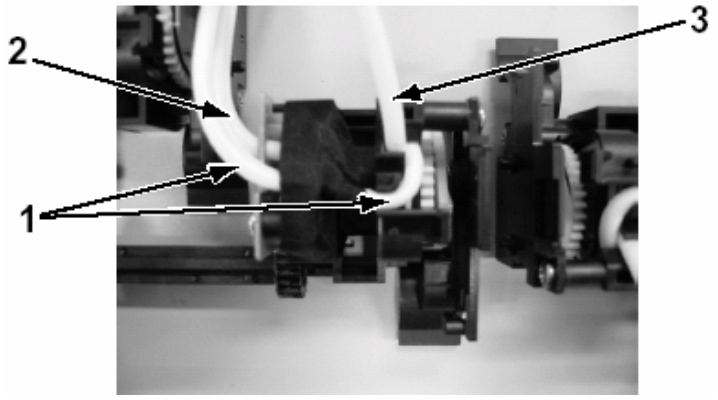


Step 2 : Connect up the tubing for pump 1 as shown on the figure below.



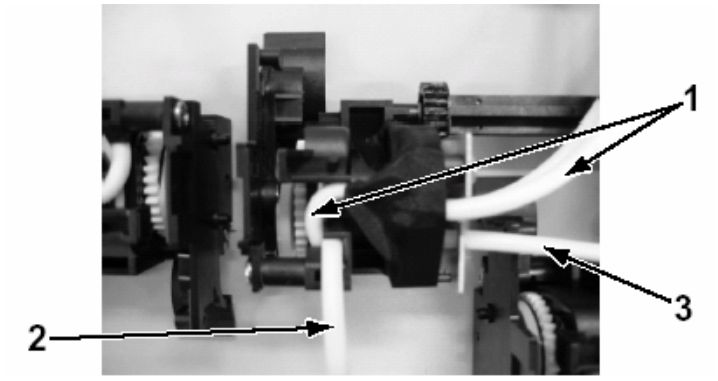
1 = Tube connecting to waste fluid tube	2 = Tube connecting to cap a
3 = Tube connecting to cap d	

Step 3 : Connect up the tubing for pump 2 in the manner shown in the figure below.



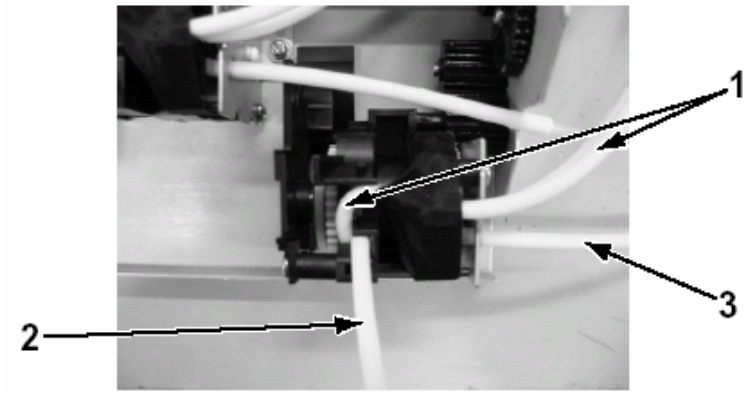
1 = Tube connecting to waste fluid tube	2 = Tube connecting to cap b
3 = Tube connecting to cap c	

Step 4 : Connect up the tubing for pump 3 as shown in the figure below.



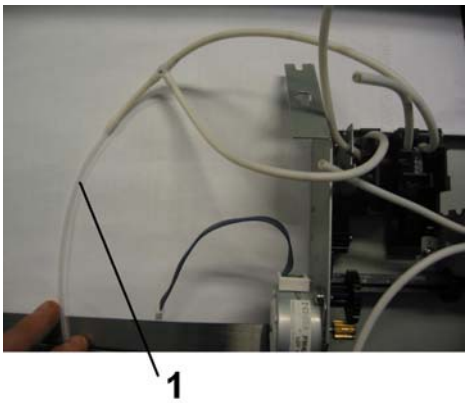
1 = Tube connecting to waste fluid tube	2 = Tube connecting to cap f
3 = Tube connecting to cap g	

Step 5 : Connect up the tubing for pump 4 as shown in the figure below.



1 = Tube connecting to waste fluid tube	2 = Tube connecting to cap e
3 = Tube connecting to cap h	

Step 6 : Insert in the waste fluid tubes from the pumps a piece of 15 cm tube (DF-43951).

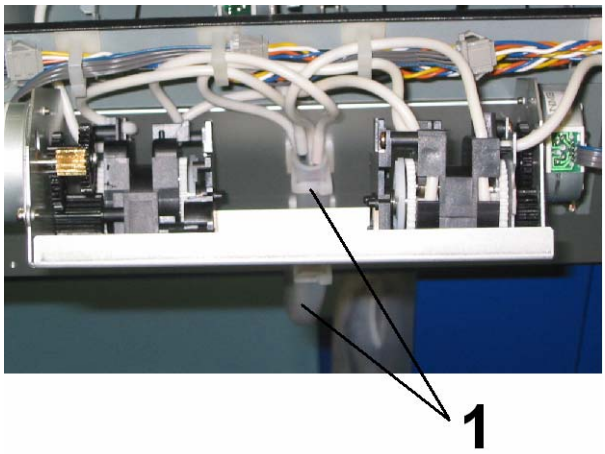


1 = piece of tube (15 cm)

Step 7 : Stick the locking wire saddle onto side plate F.

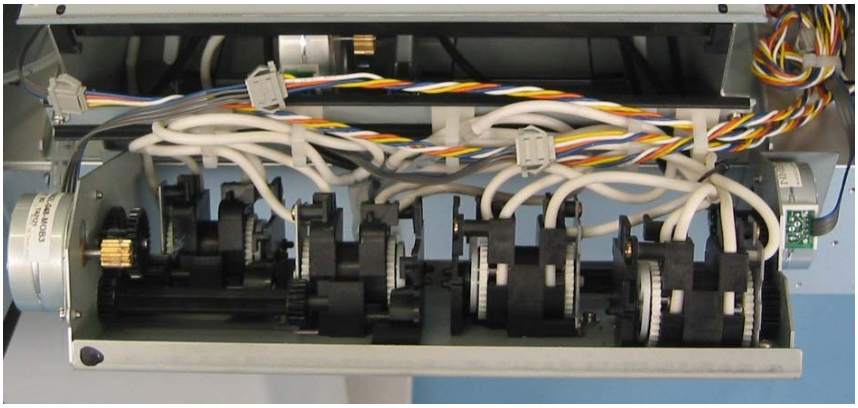
Step 8 : Bundle the tubes and connectors together in the locking wire saddle.

Step 9 : Bundle the waste fluid tubes in the large waste fluid tube.



1 = large waste fluid tube

Step 10 : Bundle the remaining tubes, cables and connectors together in the manner shown in the figure below.



7.16. BOARD CHECKLIST

7.16.1. Power supply board.

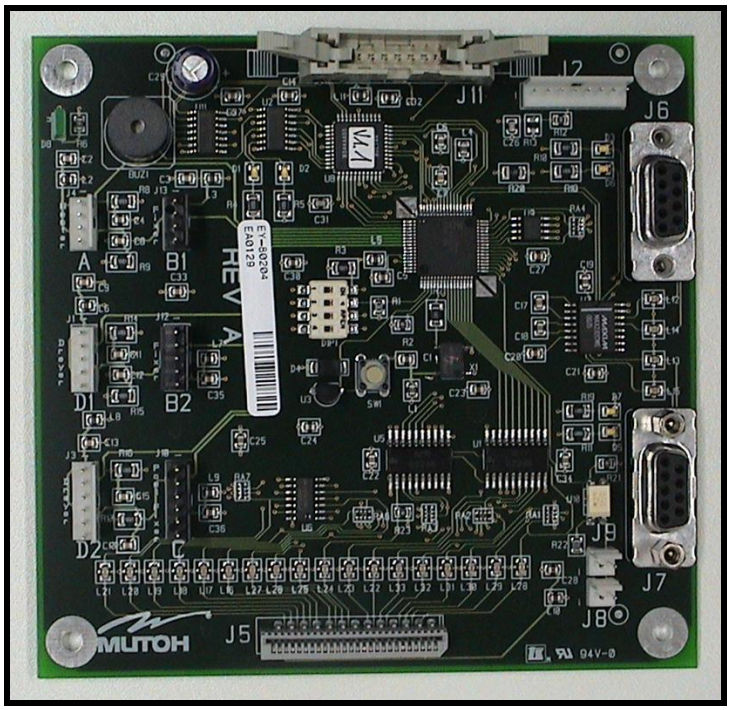
Green LED on Power Supply	ON	OFF	Flashing
	Power supply works ok	Power supply is not working. → 220V/110V? → Load connected to PS? → Error message on Rockhopper II: "Heat system not found"(*)	Power supply is not starting. → Load connected? → Restart machine (wait 10 sec after power off) → Error message "Heat System Not Found" (*) → Damaged power supply → replace

Notes :

(*) In case of this error message, it is possible that the supply does not work due to a snubber problem on the power distribution board (EY-80203). 3 possibilities:

- → Snubber resistor cut with cap=100nF (Malfunction is not caused by the snubber)
- → Resistor not cut, capacitor = 4,7nF (disc shape) (Malfunction is not caused by the snubber)
- → Resistor not cut, capacitor = 100nF (rectangular shape), malfunction may be caused by snubber, so cut resistor.

7.16.2. Control board.

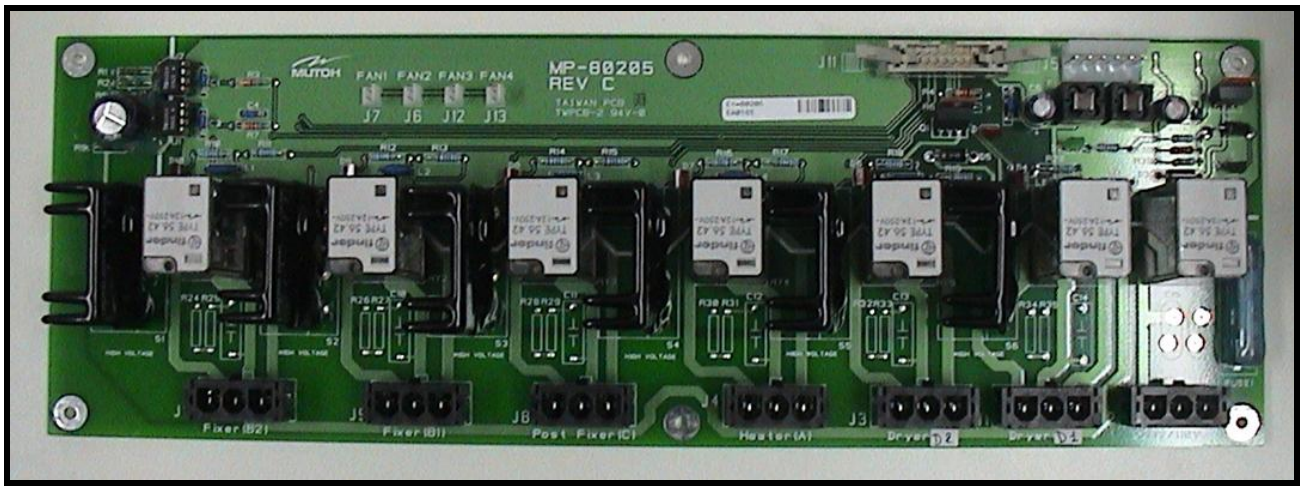


LED D8	POWER	ON	OFF
	GREEN	Board has 5V => ok	Board has no 5V Power cable connected? → Power supply green led ON? → Bad cable
LED D2	ALIVE (*)	Blinking: OK	Fatal error:µP lockup
LED D1	ERROR (*)	No error	Error occurred
LED D5	8000 RX/TX	Communication ok	No communication
LED D7	8000 RX/TX	Communication ok	No communication
LED D3	Programming led	Not used for user!!	
LED D6	Programming led	Not used for user!!	
SMD L11, L2,L6,L13	Coil	OK	Burned
		No problem	Temperature sensor cable shorted to chassis, indication which cable has a problem.

Notes :

(*) Will be available in the version after V2.02.

7.16.3. Power board.



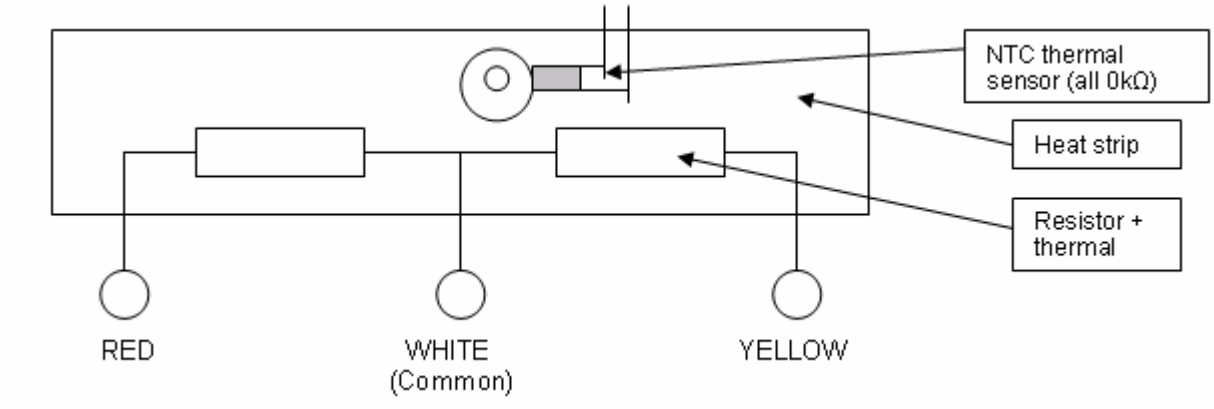
D2	RED/GREEN(revC)	ON	OFF
	From rev C on, it will be a green led	OK	NO +24V present → PS ok? → Power cable ok?
D1	RED	ON	OFF
	110/220V indicator	Should be on in a 110V grid.	Should be off in a 220V grid.
D23, 21,19,13,6,4	RED	ON	OFF
		Heater is on	Heater is off
	During **cold** start-up, the selftest will run. All leds should go on, one at a time, for a short period. After a **warm** start-up, the selftest will not run. During **normal operation**: leds can go on in a random manner.		

7.16.4. Heater Elements

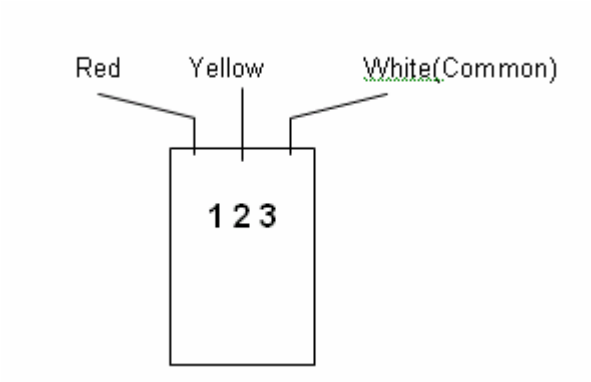
Resistance (Ω)	**50”**	**64”**	**87”**
A	2 x 48	2 x 32,3	2 x 24,2
B1/B2	2 x 97	2 x 65,5	2 x 44
C	2 x 48	2 x 32,3	2 x 22,5
D1/ D2	2 x 27	2 x 22,5	2 x 22,5
Thermal Sensor	10k	10k	10k

When checking the thermal sensors, also measure them with the chassis as a reference. If the resistance is not infinite, the sensor has a short circuit, mostly due to a damaged cable.

If the resistance is infinite, the thermal fuse might be blown. Or in minor cases, check for bad connections at heater elements and connector.



Connector:



Tips

Safety relay

On the powerboard is a safety relay that will switch 220 or 110V to the solid state relays whenever the Rockhopper II series printer is powered off. This is to prevent that defective solid state relays can make the heatstrips overheat and melt its fuses.

Buzzer:

1 small beep for each heater that reached the desired temperature.
3 short beeps when heater accepts new data coming from the RHII.
4 seconds beep => error.

Heater D

In case of a defective fuse on a D-heater, check for isolation on the temperature sensors. Some machines were released without isolation patches on the temperature sensors and cause the strips to overheat.

Heater A

In earlier machines strips were mounted with a fuse with a critical, narrow margin. Please do not pass 48°C in the menu setting. This will be solved in successive firmware releases after 1.04.

FLAT Strip

In case of a DIY replacement of a heatstrip, make sure that the strip is flatly mounted! Air gaps between strip and plate can cause overheating and cause fire!

Firmware Bugs

Check the firmware division for these.

7.16.5. Checklist

Product information :

Serial Number : _____
Firmware Version : _____
Firmware Version Heater Control Board : _____

Basic diagnostics :

Grid power	110V	220V
Grid frequency	50Hz	60Hz
Fuse 1	OK	NOK (OPEN)

Power Supply :

LED (Green)	ON : □	OFF : □	Flashes : □

Control Board :

LEDS :	**ON**	**OFF**	**Flashes**
LED D8	□	□	□
LED D1	□	□	□
LED D2	□	□	□
LED D5	□	□	□
LED D7	□	□	□
LED D3	□	□	□
LED D6	□	□	□

Filters	**OK**	**Bad (visual)**
SMD L11	□	□
SMD L2	□	□
SMD L6	□	□
SMD L8	□	□

Power Board :

D2 Red/Green (revC)	Power	ON : □	OFF : □
D1	110V/220V	ON : □	OFF : □
D23, 21,19,13,6,4	Heater On	Flashes?	
	Cold Start up :	_____	
	Operation :	_____	

Heater elements :

Resistance (Ω)	**50”**	**64”**	**87”**
A	2 x 48	2 x 32,3	2 x 24,2
B1/B2	2 x 97	2 x 65,5	2 x 44
C	2 x 48	2 x 32,3	2 x 22,5
D1/ D2	2 x 27	2 x 22,5	2 x 22,5
Thermal Sensor	10k	10k	10k

7.17 FLUSHING BOX HEIGHT POSITION ADJUSTMENT

Incorrect position of the flushing box height will cause large ink drops on the printout.

Please follow the steps below to correctly adjust your flushing box height position.

Before adjustment of the flushing box height position, please make sure to have:
1. The “Flush Box Height Jig Tool” (JD-80001)
2. The “Spacer kit flush box” (KY-80002).

Step 1 : Remove the I/H cover.

Step 2 : Remove side cover R.

Step 3 : Remove side cover L.

Step 4 : Remove the front cover.

Step 5 : Remove the 4 screws fixing the carriage cover.

Caution :

Please note that this cover is only on a Rockhopper II (2 heaters) and Falcon II printer.

Step 8 : Remove the carriage cover.

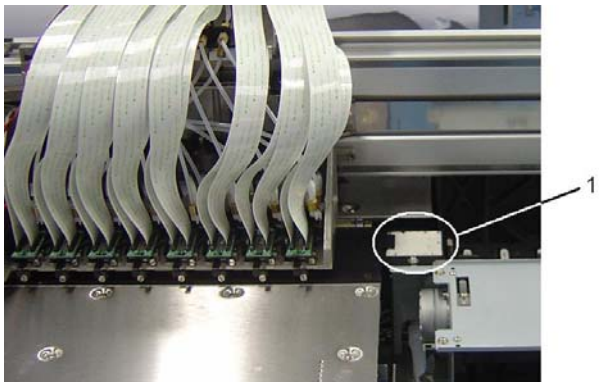
Step 9 : Start up in Diagnostic Mode and Unlock the Head

F1 → | * Head lock *
Lock Unlock | ← F2
(1/1)

↓ Select (unlock)

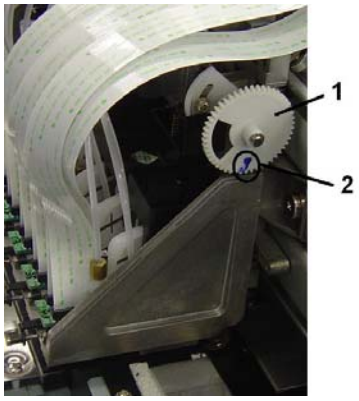
* Unlock *
Wait Little time

Step 10 : Move the carriage to the left and place the flushing box height jig tool on the flushing box.



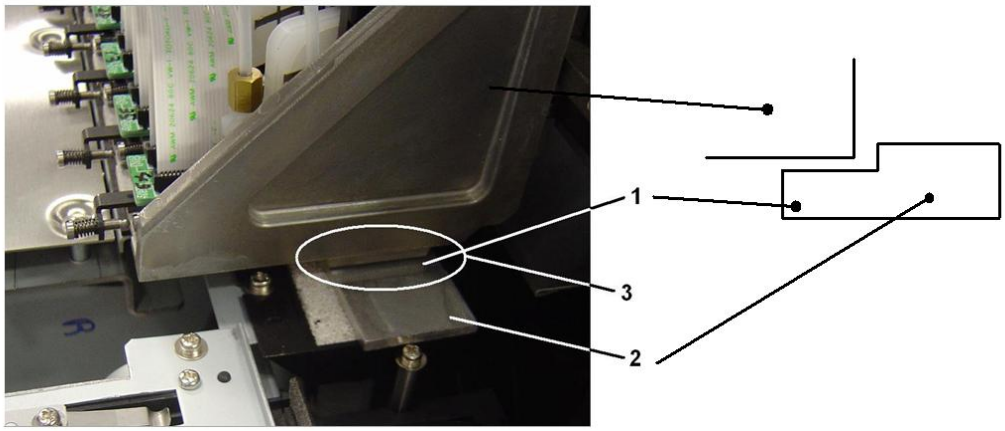
1 = Flush box height jig tool

Step 11 : Turn the wheel of the carriage till the arrow is on the bottom so the carriage is in the lowest position.



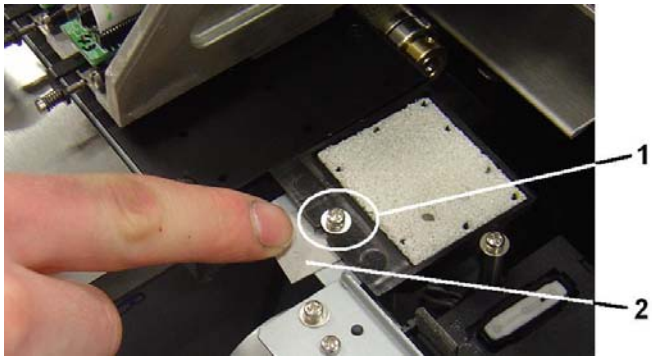
1 = Carriage wheel	2 = Arrow

Step 12 : Carefully move the carriage to the right. The carriage should pass the first interval but not the second.



1 = Interval 1	3 = Reference of the head
2 = Interval 2	

Step 13 : When the carriage pass both intervals, move the carriage to the left. Loosen the screw of the flushing box a bit and install one or more spacers.



1 = Screw	2 = Spacer (0,5 mm or 1 mm)

Note:

The “Spacer kit flush box” (KY-80002) consists out of 10 spacers with thickness 0,5 mm and 10 with thickness 1,0 mm.

Thickness: 0,5 mm (DF-44237)

Thickness: 1,0 mm (DF-44236)

Step 14 : Tighten the screw and repeat step 10 to 12 until adjustment is correct.

8. MAINTENANCE

8.1. INTRODUCTION

This chapter provides information about the periodical services, part life, lubrication/bonding and transport.

Important :

- **Before replacing parts, be sure to perform following operations.**
  - **Turn the machine power OFF.**
  - **Remove the product's electrical plug from the socket. Otherwise, you may suffer electric shock or the machine's electric circuits may be damaged.**
- **Disconnect all cables from the machine. Not doing so could cause damage to the printer.**

Caution :

- Ensure there is sufficient space around the printer when performing maintenance work.
- If you need to operate the printer with the cover removed for maintenance, be careful not to get hurt by the moving parts.
- In the periodical services, the following work must be performed with one or more assistant worker.
  - Removing/attaching the unit and the stand
  - Packaging the machine for transport

8.2. CLEANING

You need to clean the printer periodically to keep it in best working condition.

Notes :

- Refer to the User's Guide.
- Refer to "Exploded Views/Service Parts List".

Part	Timing	Check point	Action
Platen surface Media guide F Pressure rollers	Several times per year	➢ Media dust accumulation ➢ Foreign objects ➢ Damages	Clean it. Please note : If ink deposits are present, remove them with a dampened cloth and wipe the area with a clean dry cloth.
Timing fence (CR encoder detection slit plate)	Several times per year	➢ Media dust accumulation ➢ Foreign objects ➢ Damages	Clean it. If any damages are found, replace the part.
P_REAR sensor surface	Several times per year	➢ Media dust accumulation ➢ Foreign objects	Clean it.
Cleaner head (Cleaning wiper)	Several times per year	➢ Ink deposits ➢ Damages	Clean it.

8.3. PERIODICAL SERVICES

This section describes the periodical services required for this machine.
The periodical services ensure stable printout quality of the machine.
In the periodical services, some service parts may be checked, cleaned or replaced.

Caution :

- There are to parts of periodical service, namely the parts that can be replaced by the end-user and the parts that needs to be done by authorized Mutoh technicians.

8.3.1. Service by end-user

Perform periodical inspections according to the table below.

N°	Part number	Quantity	Action
1	ME-80771	4	Replace the wipers.
2	DF-43694 + DE-35399	2+1	Replace the sponge at the back of the capping station.
3	AP-51600	1	Replace the sponge
4	/	/	Clean the wipers.
5	/	/	Clean caps in the maintenance station.
6	/	/	Clean around the bottom of the heads. (NOT the nozzle plate)

N°	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
1			X						X			
2			X			X			X			X
3			X			X			X			X
4	WEEKLY											
5	WEEKLY											
6	WEEKLY											

8.3.2. Service by authorised Mutoh technician

Perform periodical inspections according to the table below.

N°	Part number	Quantity	Action
1	MY-42110	4	Replace the dampers.
2	MY-80300	2	Replace the pumps.
3	MY-35380 + ME-80771	1+4	Replace wiper arm and wipers.
4	ME-18280	4 x 0.8 m	Replace the tubing from the pumps to the waste bottle
5	MY-35085 + ME-80385 + ME-60014	1+ 1 m +1	Replace the right spitting box + tube + L connection
6	MY-80627	1	Replace the capping station.
7	/	/	Apply grease on head up-down cams.
8	/	/	Apply grease on Y-motor belt.
9	/	/	Apply grease on roller path carriage.
10	/	/	Apply grease on capping station camm + gears.
11	/	/	Clean the maintenance station area.
12	/	/	Remove dust in fan area underneath print platform.

N°	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
1												X
2						X						X
3						X						X
4												X
5						X						X
6												X
7						X						X
8						X						X
9						X						X
10						X						X
11						X						X
12						X						X

8.4. PART LIFE INFORMATION

This section shows how to check the life of a service part.
To know the life of a service part, check the maintenance counter from the counter display menu in the maintenance mode.

Notes :

- Refer to "Counter Display Menu" for more details of the counter display menu.

Name	Life expectancy	Warning display
Print head	28 billion dot	Warning at 95% (Warning Head Life)

8.5. JIG AND TOOL LIST

This section provides lists of jigs and tools required for service operations.

8.5.1. Required Tools

(1) Tools for part replacement

No.	Name	Part code	Remarks
1	Philips driver No.2	Generic product	Shaft length should be 250 mm or more.
2	Philips driver No.2	Generic product	Shaft length should be 50 mm or less.
3	Philips driver No.1	Generic product	Generic product For head adjustment, shaft length 150 mm or more
4	Flat-head driver	Generic product	
5	Pliers	Generic product	
6	Tweezers	Generic product	
7	Hexagon wrench (1.5 mm to 6.0 mm)	Generic product	For head adjustment, etc.
8	Box driver (5.5 mm)	Generic product	For exchanging the mainboard
9	Box driver (7.0 mm)	Generic product	For exchanging the power board
10	E ring holder (E-2.5)	Generic product	JIS E-2.5 IWATA DENKO Co., Ltd.
11	E ring holder (E-4)	Generic product	JIS E-5 IWATA DENKO Co., Ltd.
12	Head cleaning jig	JD-30410	➢ Exclusive rubber bush, including mini fitting ➢ 4 set required per a main unit
13	Rubber bush	JD-42052	Expendable supplies (exchange per using 20 times)
14	Mini fitting	JD-42053 / Generic product	Maker: Iuchi Seieido Co., Ltd.
15	Cleaning liquid	A29 JD-41844	18l
16	Bottle for cleaning liquid (500 ml)	JD-42054 / Generic product	

(2) Tools for adjustment

No.	Name	Part code	Remarks
1	Personal computer	Generic product	Printer port mounted parts
2	Printer cable	Generic product	Amphenol 36P, male connector
3	Tension gauge	Generic product	For measuring 5,000g Max. Reference maker: Oba Keiki Seisakusho
4	Tension gauge	Generic product	Max. capacity should be 200 to 500g. Reference maker: Oba Keiki Seisakusho
5	Y-axis tension attachment	JD-42050	For steel belt tension adjustment ➢ Gauge diameter: 4 mm (0.16in.) or less
6	Y-axis tension attachment 2	JD-42435	For steel belt tension adjustment ➢ Gauge diameter: 2 mm (0.08in.) or less
7	CR gap check jig	JD-42177	For head height adjustment
8	Flash memory card	Generic product	Spec.: 4MB Flash Memory Card Type-II (PCMCIARel.2.1/JEIDAVer.4.2) 5V unique driving spec.
9	Loupe (equivalent to 10x)	Generic product	Generic product For head precision adjustment
10	Block gauge (21 mm)	Generic product	Generic product For cover sensor adjustment
11	Hand glass	Generic product	Generic product For checking the cap trace
12	Double coated media	Exclusive specified media	For adjusting printing accuracy and sensor sensitivity Maker: Mitsubishi inkjet media Product number: IJ-MatteCort 143 Other similar media RJ6-THCCPAPE 137 (MUTOH)
13	Straight scale (1000 mm)	Generic product	

8.6. LUBRICATION/BONDING

This section covers the lubrication/bonding information.
After disassembling/assembling this machine, always perform necessary lubrication/bonding according to the table below.

Caution :

- Do not oil the printer mechanism with oil other than designated by MUTOH. Doing so may damage the parts or shorten the lifetime.

Parts		Item	Manufacturer	Type
PF Driving Components	U/D gear of the pressurizing arm	Apply to the gear components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Arm motor mounting plate and intermediate gear boar diameter part	Coating the intermediate gear boar part	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Deceleration pulley	Apply to the driving pulley	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	X-axis deceleration belt	Coating the deceleration belt gear intermesh part	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
CR Driving Components	Y rail machining drawing	Coating the hole that fastens the Y drive base	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
		Coating the hole that fastens the return pulley mounting plate	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Y rail and Roller guide	When inserting the Y rail, apply to the lower face of the roller guide.	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Pressurizing axis bearing	Coating the upper part and shaft insertion part	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Pressurizing cam	Apply to the cam components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Roller guide	Apply to the roller guide surface.	Mitsubishi	Super multi dia tetra No.32
	Slide idler gear	Apply to the gear components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Driving pulley	Apply to the driving pulley	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	CR deceleration belt	Coating the deceleration belt gear intermesh part	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
Cursor Components	Head U/D colour	Apply to the head U/D colour	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Head U/D cam	Apply to the head U/D cam	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Slide gear	Apply to the gear components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
Head base components	Head installation board	Apply to the screw hole position which fastens the shoulder screw	Kanto Kasei Co., Ltd.	FLOIL G-MK-1

Maintenance components	Maintenance assembly	Apply to the gear and cam components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
Pump Components	Combined gear	Apply to the gear components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Deceleration gear	Apply to the gear components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Idler gear	Apply to the gear components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
	Idler gear axis	Apply between the pump base and the idler gear axis.	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
Winding components	Winding assembly (gear components)	Apply to the gear components	Kanto Kasei Co., Ltd.	FLOIL G-MK-1
PF Driving Components	Set screw	Apply the screw lock to the coupling set screw.	Three Bond Co., Ltd.	1401
CR Driving Components	Adjusting screw of the CR slave pulley	After adjusting the steel belt, apply the screw lock.	Three Bond Co., Ltd.	1401
Cursor Components	Step-bore screw	Screw lock applying to the shoulder screw that fastens the cursor and head mounting plate	Three Bond Co., Ltd.	1401
Maintenance components	E ring	Apply to each of the E-rings (prevents noise due to vibration).	Three Bond Co., Ltd.	1401
Scroller receptacle R components	Set screw	Apply the screw lock to the adjusting knob set screw.	Three Bond Co., Ltd.	1401
Others	Screw	Apply to the position of the screw lock.	Three Bond Co., Ltd.	1401
PF Driving Components	CR tape power cable	Stick double-sided tape to the CR tape power cables (locating).	Not specified	
Head base components	Head 2 tape wire	Stick double-sided tape to the head 2 tape power cables (locating and preventing floatation).	Not specified	
Pump Components	Pump assembly	Acetate tape is fixed to the pump assembly tube (prevents dislodging of tube).	Not specified	
Others	Locations where sharp edges are likely to occur	Acetate tape is fixed to tape electrical wires and harnesses, where sharp edges are likely to occur (sharp edge protection).	Not specified	

8.7. TRANSPORTATION OF MACHINE

This section explains transferring and transporting the printer.
When you transport the printer, the printer should be repackaged using the original box and packing materials, to protect it from vibration or impact.
Transport the printer following the procedures below.

(1) *Task before transportation*

Step 1 : Turn on the power to the product.

Step 2 : Verify if the product is at a normal status.

Step 3 : Start the auto-diagnostic function.

Notes :

- Refer to “Self-Diagnosis Function”.

Step 4 : Select "Adj:CleanHead".

Step 5 : Select "CleanHead" menu.

Notes :

- Refer to “Head wash menu”.

Step 6 : When the head cleaning has been finished, turn the power OFF.

Step 7 : Remove the scroller.

Step 8 : Disconnect the power cable and all other cables.

Step 9 : Remove the winding system installed.

Notes :

- Refer to Users Guide of the Winding Systems.

Step 10 : Install the protective materials.

Notes :

- Refer to the User’s Guide.

Step 11 : Remove the product from the special stand.

Notes :

- Refer to the User's Guide.

Step 12 : Package the machine.

(2) Task after transportation

Step 1 : Unpack, assemble, and install the machine.

Step 2 : Reinstall the winding system.

Notes :

- Do not forget to align the winding system after installation. Please refer to the users guide of your winding system.

Step 3 : Make the machine ready for operation.

9. TROUBLESHOOTING

9.1. INTRODUCTION

This chapter explains the procedures for troubleshooting this product.
When the product indicates a failure and an error message is also displayed on the control panel, refer to "Troubleshooting procedures when a message has been displayed" and implement treatment. When the product indicates failure but an error message has not been displayed, refer to "Troubleshooting procedures when an error message has not been displayed" and implement treatment.

9.2. TROUBLESHOOTING PROCEDURES WHEN A MESSAGE HAS BEEN DISPLAYED

This chapter explains the messages displayed when the product is operating normally and when an error occurs.
There are the following types of messages.

Priority level	Message Type	Description	Refer to
1	Operating condition display	Displayed when the product is operating normally	→ Operating condition display
2	Heating system error	Displayed when heating element errors occurs during operation.	→ Heating system error
3	Message type errors	Message type errors are displayed when trouble occurs during operation.	→ Message type errors
4	Data error	Displayed when data communication trouble occurs between the computer and this product.	→ Data error
5	Command errors	Displayed when trouble occurs during analysis of the command data that is sent to this product from the computer.	→ Command errors
6	Errors requiring restart	Displayed when trouble that is critical to the operation of this product occurs.	→ Errors requiring restart

9.2.1. Operating condition display

This chapter explains the messages displayed, the items to be confirmed and the remedy.

No.	Message	Phenomenon	Check point	Action	Refer to
1	Cover Open	The front cover is open.	(1) Check if the cover R/L sensor assembly comes on and off properly when the front cover is opened and closed.	• Adjust the operating position of the cover sensor R/L assembly.	→ Cover sensor adjustment
			(2) Make sure that cables for the cover sensor assembly are securely connected.	• Securely connect the cables for the cover sensor assembly to connectors J155 and J156 on the mainboard assembly. • Securely connect the cover L sensor to the cover L cable.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly. → Cover sensor adjustment
			(3) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
2	Set Paper	The lever is up	(1) Check the operation of the transmission photosensor for the lever up/down via “Test:Sensor” of the self-diagnostic function.	• Replace the transmission photosensor at the lever.	→ Replacing the transmission photosensor.
			(2) Make sure the transmission photosensor at the lever motor has been securely installed.	• If the transmission photosensor is detached, fix it securely.	→ Replacing the transmission photosensor.
			(3) Check the sensor element of the transmission photosensor at the lever motor for contamination.	• Clean the sensor element using cotton swabs.	→ Replacing the transmission photosensor.

			(4) Make sure the transmission photosensor cables at the lever motor have been securely installed.	• Securely connect the transmission photosensor cables to Mainboard assembly connectors J123 and J124.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(5) Check the operation of the foot lever via "Test:Sensor" of the self-diagnostic function.	• Replace the foot switch	→ Refer to the User's Guide
			(6) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
3	Paper End	The paper is not setup	(1) Check he operation of the "Test:Sensor" via the self-diagnostic function.	• If OFF is displayed when he paper is setup, replace he P_REAR sensor assembly.	→ Replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly.
			(2) Make sure P_REAR sensor assembly cables underneath the paper guide R are securely connected.	• Securely connect the cables to Mainboard assembly connectors J128 and J129.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(3) The P_REAR sensor assembly may be damaged.	• Replace the P_REAR sensor assembly.	→ Replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly.
			(4) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

9.2.2. Message type errors

The following explains the messages, items to be confirmed and remedies to take when message type errors occur while the product is operating.
Message type errors are displayed when trouble occurs during operation.
When message type errors occur, this product displays the following error messages on the operation panel and stops the operation.
When the causes of errors are removed, message type errors are restored and the printing operation will be restarted.

No.	Message	Phenomenon	Check point	Action	Refer to
1	Undefined paper	The printer failed to detect the media.	(1) Check the operation of the P_EDGE sensor via "Test:Sensor" of the self-diagnostic function.	• If the sensor responds to the presence of the paper, adjust the sensor volume. • If the sensor does not respond to the presence of the paper, replace the P_EDGE sensor assembly	→ Media sensor sensitivity adjustment → Replacing the P_EDGE sensor assembly.
			(2) Make sure the P_EDGE sensor assembly connector at the cursor is securely connected.	• Securely connect it to CR board assembly connector J234.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(3) Make sure the R_REAR sensor assembly cables underneath paper guide R are securely connected.	• Securely connect the cables to Mainboard assembly connectors J128 and J129.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(4) Check the CR tape power cables for skewed insertion.	• Redo the connections of the following connectors : • CR board : J201 – J216 • Mainboard : J137 – J152	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(5) The CR tape power cables may be damaged.	• Replace the CR tape power cables.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
			(6) The CR board assembly may be damaged.	• Replace the CR board assembly.	→ Replacing the CR board assembly.

			(7) The Mainboard assembly may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
2	Paper Slant	The paper is fed askew.	(1) Reset the paper and check if the condition recurs.	• If this is caused by incorrect paper setup, explain the correct paper setup procedure.	-
3	Paper Cut Error	Even though cutting operation was performed, the paper was not completely cut and removed.	(1) Check the cutter grooves for accumulated paper dust and slip.	• Remove the accumulated paper dust along the direction of the grooves.	→ Please refer to the User's Guide.
			(2) has the cutter cap securely been installed?	• Reset the cutter cap securely	→ Please refer to the User's Guide.
			(3) Check the cutter's up and down sliding operation.	• If it does not rise : Go to step (4) • If it rises : Go to step (5)	
			(4) Check if the cutter drops to the bottom end under its own weight when the cutter has been installed without the cutter spring.	•If it drops : The cutter spring may have a problem. Replace the cutter spring while referring to the unfolded view. • If it does not drop : The cutter may have a problem. Replace the cutter. If the cutter does not drop after replaced, replace the cutter holder.	→ Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly and solenoid spring.

			(5) Check the up and down operation of the solenoid via "Life/Cutter" of the self-diagnostic function. a) The solenoid moves up and down : Check the cutter's down position relative to the cutter groove. b) It does not move up and down.	OK : The cutter's service life is reached or it is damaged. Replace the cutter. NG : Adjust the position of the cutter holder. • The connectors may have poor contacts. Check the connections of the following connectors : CR board : J235 CR board : J201 – J216 Mainboard : J137 – J152	→ Please refer to the User's Guide → Cutter adjustment → Replacing the CR board assembly. → Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(6) Open CR cable, faulty solenoid assembly, faulty board assembly, etc., may be the cause.	•Replace the CR tape power cables. • Replace the solenoid assembly • Replace the CR board assembly • Replace the Mainboard assembly.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube. → Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly and solenoid spring → Replacing the CR board assembly → Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
4	End of Roll	Displayed when the end of the roll paper is detected during the use of roll paper. This is released when the lever has	(1) Check if the message is still displayed after turning the power off and then back on again.	If the message is displayed : go to step (2)	

		been set to the up position.	(2) Check the P_REAR sensor assembly for the contact condition.	•Redo the connections of Mainboard assembly connectors J128 and J129. If the paper is not initialized, the sensor may be damaged. • Replace the P_REAR sensor assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly. → Replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly.
			(3) The Mainboard may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
5 6	[ ] Near End [ ] Ink End	The remaining amount of ink is low. Printing is still possible. There is no more ink left. Printing in progress is interrupted immediately.	(1) Check the ink end via "Test: Sensor" of the self-diagnostic function.	• Operate the lever at the end detecting element of the ink sensor assembly to check if the ink end indication changes. (At this time, the sensor for detecting the presence of cartridges is set to Yes.) If there is no response, replace the ink sensor assembly.	→ Sensor menu → Replacing the I/H (ink holder) assembly
			(2) Check the ink sensor connector for the contact conditions.	• Redo the connections of the following connectors. • Junction board : J401 – J418 • Mainboard : J133 – J134	→ Replacing the Junction board assembly.
7	Not Original Ink		(1) Check the ink end ID via "Test: Sensor" of the self-diagnostic function. (This is limited to when smart chips are set.)	• If the type of the installed cartridge does not match the displayed type, the ink ID sensor may be damaged.	→ Sensor menu

			(2) Check the ink ID sensor connector for the contact conditions.	• Redo the connections of the following connectors : • Junction board : J401 – J418 • Mainboard : J133 – J134	→ Replacing the JUNCTION board assembly.
			(3) The Mainboard may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
8	Warning Waste INK Tank	The waste tank will soon be full.	(1) Check if the message is still displayed after turning the power off and then back on again.	• When a message is displayed : Go to step (2)	-
			(2) The amount of waste ink inside the tank reached the specified level.	• Dispose of the waste ink in the waste bottle.	-
			(3) If initialization does take effect when the waste ink is disposed of and waste ink history is initialized, the Mainboard may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
9	Warning Waste INK Tank	The service life of the ink tube will soon be reached.	(1) Check if the message is still displayed after turning the power off and then back on again.	• When a message is displayed : Go to step (2)	-
			(2) The number of times the ink tube was used reached the maximum allowable times.	• Replace the ink tube. • Initializing CR motor history.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
			(3) If initialization does take effect when the CR motor history is initialized after the ink tube is replaced, the Mainboard may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
10	(Warning Head Life)	The service life of the print head will soon be reached.	(1) Check if the message is still displayed after turning the power off and then back on again.	• When a message is displayed : refer to step (2)	

			(2) The number of times the print head was used reached the maximum allowable times.	• Replace the print head assembly. • Initialize the head unit.	→ Replacing the print head assembly and head tape power cable. → Counter initialization menu.
			(3) If initialization does not take effect when the head unit is initialized, the Mainboard assembly may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
11	Hard disk status connect error	There is a problem in the hard disk connections.	(1) Check the connections of connectors.	• Redo the connections of the following connectors. • Mainboard : J102 • power source board (small) assembly : CN51 – CN52	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly. → Replacing the power source board assembly.
			(2) The HDD_MOTHER board assembly may be damaged.	• Replace the ink tube. • Initializing CR motor history.	
			(3) Hard disk may be damaged.	• Replace the hard disks.	
			(4) The Mainboard assembly may be damaged.	• Replace the Mainboard assembly.	
12	Network initialize error	There is a problem in the network board.	(1) The PCI_LINUX board assembly may be damaged.	• Replace the PCI_LINUX board assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(2) The Mainboard assembly may be damaged.	• Replace the Mainboard assembly.	
13	Waste ink tank sts. No	The waste tank is not installed.	(1) Check if the waste bottle has been installed.	• Install the waste bottle correctly.	-
			(2) Check the operation of the waste box sensor assembly via “Sensor/Waste Bin” of the self-diagnostic function.	• Replace the waste box sensor assembly.	-

			(3) Check the connections of the connectors.	•Check if the waste box sensor connectors are connected to the rear side cap R. • Redo the connections of the following connectors. • Mainboard : J120	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(4) The Mainboard assembly may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

Notes :

- The number between brackets [ ] on the error display indicates the cartridge number.

9.2.3. Heating system error

The following explains the messages, items to be confirmed and remedies to take when errors handling heating system occur while the product is operating.
Heating system errors are displayed when communication trouble occurs between the heater strips and this product.
If heating system error occurs, the following error messages are displayed and the printer stops.
Solve the problem to delete the error message and restart the printer.

No	Message	Check point	Action
1	AC not present	AC connector.	Check AC connector
2	Error sensors A	Sensors A	Check if the sensors are connected properly.
3	Error sensor A	Sensor A	Check if the sensors are connected properly.
4	Conn. err. Left A	Sensor A	Check if the left sensor is connected properly.
5	Conn. err. Right A	Sensor A	Check if the right sensor is connected properly.
6	Error sensors D1	Sensors D1	Check if the sensors are connected properly.
7	Error sensor D1	Sensor D1	Check if the sensors are connected properly.
8	Conn. err. Left D1	Sensor D1	Check if the left sensor is connected properly.
9	Conn. err. Right D1	Sensor D1	Check if the right sensor is connected properly.
10	Error sensors D2	Sensors D2	Check if the sensors are connected properly.
11	Error sensor D2	Sensor D2	Check if the sensors are connected properly.
12	Conn. err. Left D2	Sensor D2	Check if the left sensor is connected properly.
13	Conn. err. Right D2	Sensor D2	Check if the right sensor is connected properly.
14	Couldn't reach temp	Heater strip	After 10 minutes, temperature is not reached. Check the heater strips.
15	Err: Temp > 85°C!	Heater strip	Temperature comes higher then the limit. Check the heater strips.
16	Connection err. A	Rear Heater (A)	Check the connector of the rear heater.
17	Connection err. D1	Dryer (D1)	Check the connector of the front heater (D1).
18	Connection err. D2	Dryer (D2)	Check the connector of the front heater (D2).
19	Error sensor B1	Fixer (B1)	Check the sensor of the fixer 1 (B1).
20	Error sensor C	Post fixer (C)	Check the sensor of the fixer (C).
21	Connection err. B1	Fixer (B1)	Check the connector of the fixer 1 (B1).
22	Connection err. C	Post fixer (C)	Check the connector of the post fixer (c).
23	Error sensor B2	Fixer (B2)	Check the sensor of the fixer 2 (B2)
24	Connection err. B2	Fixer (B2)	Check the connector of the fixer 2 (B2).
25	Error D group	Heaters D	Temperature difference higher than 15°C between the sensors of the D heaters.
26	Error A group	Heaters A	Temperature difference higher then 15°C between the sensors of the A heaters.
27	Error B group	Heaters B	Temperature difference higher then 15°C between the sensors of the B heaters.

Important :

Before checking the connectors, please power off the unit and remove the power cable.

Notes :

- Check if the connectors are properly connected to the power board.
- Check if the sensors are connected onto the right connector.

9.2.4. Data error

The following explains the messages, items to be confirmed and remedies to take when data errors occur while the product is operating.
Data errors are displayed when data communication trouble occurs between the computer and this product.
If data error display occurs, the following error messages are displayed and the printer stops.
Solve the problem to delete the error message and restart the printer.

No.	Message	Phenomenon	Check point	Action	Refer to
1	I 15-1 error command [ ]	Online frame error	(1) Check the printing data for contents that may be judges as an error. (2) Mainboard assembly may be defective?	• Try a different drive for the application. • Replace Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
2	I 15-2 error command [ ]	Overrun error			
3	I 15-3 error command [ ]	Online parity error			
4	I 15-4 error command [ ]	Sum check error			
5	I 15-5 error command [ ]	ESC parameter			
6	I 15-6 error command [ ]	Undefined ESC			
7	I 15-7 error command [ ]	Incorrect letters ESC			
8	I 15-8 error command [ ]	Numeral character ESC			
9	I 15-9 error command [ ]	Parameter error ESC			
10	I 15-10 error command [ ]	Buffer overflow			

Notes :

- The command codes for errors may be indicated between brackets [ ].

9.2.5. Command errors

The following explains the messages, items to be confirmed and remedies to take when command errors occur while the product is operating.
Command errors are displayed when trouble occurs during analysis of the command data that is sent to this product from the computer.
If a command error occurs, the following error messages are displayed and the printer stops.
Solve the problem to delete the error message and restart the printer.

No.	Message	Phenomenon	Check point	Action	Refer to
1	MH01 error command [ ]	Undefined ESC: A command that has not been defined in command modes was analyzed.	(1) Check the printing data for contents that may be judged as an error. (2) The Mainboard assembly may have a problem.	• Try a different drive for the application • Replace Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
2	MH02 error command [ ]	Parameter error : Number of parameters following command is incorrect.			
3	MHO3 error command [ ]	Numeric error : Number of parameters following command is incorrect.			
4	MH04 error command [ ]	Undefined letter set: Letter sets that should not exist (do exist).			
5	MH05 error command [ ]	Buffer overflow: Polygon buffer or downloadable character buffer overflows.			

Notes :

- The command codes for errors may be indicated between brackets [ ].
- For the settings on a computer, refer to the computer's operation manual.

9.2.6. Errors requiring restart

The following explains the messages, items to be confirmed and remedies to take when errors requiring restart occur while the product is operating.
Errors requiring restart are displayed when trouble critical to the operation of this product occurs.

- Foreign material disturbing the printer operation has been loaded in the printer.
- An electrical circuit (such as board, motor or sensor) failure has occurred.
- An error on control program of the printer has occurred.
- When errors requiring restart occur.

The product stops operation after the following actions take place.

1. The power supply to the operation has been automatically shut-off.

2. All lamps on the operation panel flash and the buzzer sounds intermittently.

3. Error messages are displayed on the operation panel.

If an error requiring a restart has occurred, solve the problems to restart the printer and delete the error.

(1) CPU system critical errors

No.	Message	Phenomenon	Check point	Action	Refer to
1	E 001 error DRAM	Standard DRAM error : Abnormal condition in standard memory mounted on Mainboard assembly	(1) Mainboard assembly may be defective.	• Replace Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
2	E 002 error Opt. DRAM	Option DRAM error : Abnormal condition in optional memory mounted on Mainboard assembly	(1) If foreign material is present in the slot (J103) of the extended memory, errors may result.	• Remove dust using a tool such as air duster, then reinstall the memory.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(2) Install known good optional memory (the capacity must be equal to the one in the user's unit) then check the equipped memory capacity via "Test:Ram Capacity" of the self-diagnostic function.	• Replace memory.	
			(3) Mainboard assembly may be defective.	• Replace Mainboard assembly	

3	E 016 error CPU Err [00]	Interruption exception error: Trouble occurred in the interrupt process	(1) Check the AC power source and the printer peripheral devices(2) Check if the error recurs. If not, check by powering-up the product several times. (3) The Mainboard assembly may have a problem.	• Replace Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
4	E 016 error CPU Err [02]	Command boundary exception errors: Trouble occurred in the command boundary.			
5	E 016 error CPU Err [03]	Data boundary exception errors : Trouble occurred in the data boundary.			
6	E 016 error CPU Err [04]	Address exception error (load or command fetch): Address error occurred while loading or fetching commands.			
7	E 016 error CPU Err [05]	Address exception error (store) : Address errors occurred while saving.			
8	E 016 error CPU Err [06]	Address exception error (command fetch): Address errors occurred while loading or storing commands			
9	E 016 error CPU Err [07]	Bus exception errors (Loading and storing): buss errors occurred while loading and storing commands			
10	E 016 error CPU Err [08]	System call exception errors: System call trouble occurred.			
11	E 016 error CPU Err [09]	Break point exception error: trouble occurred in the break points.			
12	E 016 error CPU Err [10]	Reservation command exception errors: trouble occurred in the reservation commands.			
13	E 016 error CPU Err [03]	Disable co-processor exception errors: trouble occurred in the co-processor.			
14	E 016 error CPU Err [12]	Calculation overflow exception errors: overflows occurred.			
15	E 016 error CPU Err [13]	Trap exception errors : trap occurred			

16	E 016 error CPU Err [15]	Floating point exception error : trouble occurred in the floating points			
17	E 016 error CPU Err [22]	Watch exception error : trouble occurred in the watch.			
18	E 016 error CPU Err [32]	Watch dog timeout exception error : watch dog time out occurred.			
19	E 016 error CPU Err [33]	Abort error : Aborts occurred			

Notes :

- For the settings on a computer, refer to the computer's operation manual.

(2) Mechanical system critical errors

No.	Message	Phenomenon	Check point	Action	Refer to
1	E065 error PF motor	Trouble occurred in the PF motor (X-axis) during operation. Displayed when the motor commended value and feedback from the encoder are significantly different.	(1) Check error history from "Test: history" of self-diagnosis function.		→ History menu
2	E067 error Paper feed encoder	Trouble occurred on paper travel (x-axis) during operation. Displayed when there is no feedback from the encoder.	(2) Set endurance running cycles to 50 or more from "Life: PF motor " of self-diagnosis function and check if X-axis motor error is issued.	• Check connection of following connectors in Mainboard assembly: → PF motor cable assembly connector J157 → PF_ENC assembly connector J154	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
3	E069 error Paper feed timeout	Timeout occurred on paper travel (X-axis) during operation. Displayed when the pressure roller has not reached the commanded position.	(3) Check "Encoder:PF" under "Test: Encoder" of self-diagnosis function.		→ Encoder Menu

4	E071 error PF over current	An overload occurred in the PF motor (X-axis) during operation.	(4) PF motor assembly may be damaged. (5) Mainboard assembly may be damaged.	• Replace PF motor assembly • Replace Mainboard assembly	→ Replacing PF Motor Assembly → Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
5	E 066 Error CR Motor	Trouble occurred in the CF motor (Y-axis) during operation. Displayed when the motor commanded value and feedback from the encoder are significantly different.	(1) Check the trouble history via "Test: Record" of the self-diagnostic function	-	→ History Menu
6	E 068 Error CR Encoder	Trouble occurred in the head travel (Y-axis) during operation. Displayed when there is no feedback from the encoder.	(2) With the power supply off, move the carriage side to side to check for jamming. → Refer to Error E072	• Clean and lubricate the rollers of the CR rail.	→ Lubrication / Bonding
7	E 070 Error CR Timeout Err	Time out occurred in the head travel (Y-axis) during operation. Displayed when he carriage has not reached the commanded position.	(3) Check if "CR Motor Error" occurs by setting the durability cycles at 50 over larger via "Life: CR Motor" of the self-diagnostic function.	• Check he connections of the following connectors. Mainboard assembly • CR motor assembly connector : J158 • CR tape power cable connectors : J137 – J152 CR Board assembly • CR tape power cable connectors : J201 – J216 • CR_ENC assembly connector : J233	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

			(4) Check the T-fence for contamination, flows and bends.	• If contaminated with grease and dust, wipe off with a dry cloth. • If contaminated with ink, wipe off with a lightly damp cloth and then with a dry cloth. • If contamination is severe, replace the T fence. a) If NG : Check the cable connections at the following locations • CR board assembly connector J233 b) Replace the following parts • T fence • CR motor assembly • CR BASE board assembly • CR tape power cables	→ Replacing the T fence
			(5) Check the "Encoder's" via "Test/Encoder" of the self-diagnostic functions.	• Replace the Mainboard assembly Make sure that the connections of the Mainboard assembly connector J155 / J156 are good and check the operation of the cover sensor via "Test/Sensor" of the self-diagnostic function.	→ Replacing the CR motor assembly. → Replacing the CR board assembly → Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
8	E 072 Error CR Over Current	An overload occurred in the CR motor (Y-axis) during operation.	(6) The Mainboard assembly may have a problem. → Error E068 occurs if Mainboard assembly connector J155/COVER-R or J156/COVER-L is not connected.	• Replace the Mainboard assembly. • Make sure that the connections of the Mainboard assembly connector J155 / J156 are good and check the operation of the cover sensor via "Test: sensor" of the self-diagnostic function.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

9	E 073 Error CR Origin	CR_HP cannot be detected.	(1) Check the transmission photosensor for CR home position detection via “Test: Sensor” of the self-diagnostic function.	• Check the connections of the transmission photosensor for CR home position detection.	→ Sensor Menu
			(2) The transmission photosensor for CR home position detection may be damaged.	• Replace the transmission photosensor for the CR home position detection.	→ Replacing the transmission photosensor.
			(3) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
10	E 074 Error Cover	Trouble occurred in the cover sensor.	(1) Check the cover sensor via “Test/Sensor” of the self-diagnostic function.	• Make sure that the connection of the cover sensor assembly is good. • Mainboard : J155 – J156	→ Sensor Menu
			(2) The cover sensor assembly may be damaged.	• Replace the cover sensor assembly.	→ Replace the cover R sensor assembly and the cover L sensor assembly.
			(3) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
11	E 075 Error Head Over Current	Trouble occurred during printer operation due to an overload of the print head.	(1) Make sure that the connections of the head tape power cables are good.	•Redo the connections of the following connectors. • CR board : J217 – J232 • Reset the head error	→ Replacing the CR board assembly. → Counter initialization menu
			(2) Make sure that the connections of the CR tape power cables are good.	•Redo the connections of the following connectors. • CR board : J201 – J216 • Reset the head error	→ Replacing the CR board assembly → Counter initialization menu

			(3) The print head may be damaged.	•Replace the print head assembly	→ Replacing the print head assembly and head tape power cable. → Counter initialization menu
			(4) The CR board assembly may be damaged.	• Replace the CR board assembly • Reset the head error	→ Replacing the CR board assembly → Counter initialization menu
			(5) The Mainboard assembly may have a problem	• Replace the Mainboard assembly • Reset the head error	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly. → Counter initialization menu
12	E 076 Error PG CR origin	The HD_SLIDE home position cannot be detected.	(1) Check the HD_SLIDE sensor via "Sensor/HD_SLIDE" of the self-diagnostic function	• Make sure that the connections of the HD_SLIDE sensor assembly connectors are good. • Mainboard : J127	→ Sensor Menu
			(2) Make sure that the connections of the HD_SLIDE sensor assembly connectors are good.	• Replace the HD_SLIDE sensor assembly.	→ Replacing the SLIDE motor assembly, HD_SLIDE sensor assembly and slide motor installation board.
			(3) The SLIDE motor assembly may be damaged.	• Replace the SLIDE motor assembly.	→ Replacing the SLIDE motor assembly, HD_SLIDE sensor assembly and slide motor installation board.
			(4) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

13	E 077 Error Head Overheat	Trouble occurred in the head driver.	(1) The HEAD_DRV board assembly may have a problem.	• Replace the HEDA_DRV board assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(2) The Mainboard assembly may have a problem	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
14	E 078 Error Head Cable	Trouble occurred in the head cable or head thermister.	(1) Make sure that the connections of the head tape power cables are good.	•Redo the connections of the following connectors. • CR board : J217 – J232	→ Replacing the CR board assembly
			(2) Make sure that the connections of the CR tape power cables are good.	•Redo the connections of the following connectors. • CR board : J201-J216	→ Replacing the CR board assembly
			(3) The print head assembly may be damaged	• Replace the print head assembly.	→ Replacing the print head assembly and head tape power cable. → Counter initialization menu
			(4) The CR board assembly may be damaged.	• Replace the CR board assembly.	→ Replacing the CR board assembly
			(5) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
15	E 079 Error Lever Over Current	An overload occurred in the lever motor during operation.	(1) The lever motor may be damaged.	• Replace the lever motor.	→ Replacing the lever motor assembly and the arm motor installation board.

			(2) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
16	E 080 Error Lever Sensor	Trouble occurred in the lever sensor.	(1) Check the operation of the transmission photosensor for the lever up/ down via “Check: sensor “ of the self-diagnostic function.	• Replace the transmission photosensor at the lever.	→ Replacing the transmission photosensor.
			(2) Is the transmission photosensor at the lever motor securely installed?	• If the transmission photosensor is detached, fix it securely.	→ Replacing the transmission photosensor.
			(3) Is the sensor element of the transmission photosensor at the lever motor contaminated?	• Clean the sensor element using cotton swabs.	→ Replacing the transmission photosensor.
			(4) Is the transmission photosensor cable at the lever motor securely installed?	• Securely connect the cable for the transmission photosensor cable to Mainboard assembly connectors J123 and J124.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(5) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly. → Counter Initialization Menu.
17	E 081 Error Cap Sensor.	Trouble occurred in the cap sensor.	(1) Check the operation of the transmission photosensor at the cap via “Sensor: Head Lock” of the self-diagnostic function.	• Replace the transmission photosensor at the cap.	→ Replacing the transmission photosensor.

			(2) Is the transmission photosensor at the cap securely installed?	• If the transmission photosensor is detached, fix it securely.	→ Replacing the transmission photosensor.
			(3) Is the sensor element of the transmission photosensor at the cap contaminated?	• Clean the sensor element using cotton swabs.	→ Replacing the transmission photosensor.
			(4) Is the transmission photosensor cable at the lever motor securely installed?	• Securely connect the cable for the transmission photosensor cable to Mainboard assembly connectors J123 and J124.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
			(5) Make sure that the connections of the SLIDE motor assembly for maintenance U/D are good.	• Replace the SLIDE motor assembly for the maintenance U/D.	→ Replacing the SLIDE motor assembly (wiper arm).
			(6) The Mainboard assembly may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
18	E 082 Error Wiper Sensor	Trouble occurred in the wiper sensor.	(1) Check the up/down operation of he cap (wiper) via “Sensor: Head Lock” of the self-diagnostic function.	• Replace the transmission photosensor at the wiper.	→ Replacing the transmission photosensor.
			(2) Is the transmission photosensor at the wiper up/down area securely installed?	• If the transmission photosensor is detached, fix it securely.	→ Replacing the transmission photosensor.
			(3) Is the sensor element of the transmission photosensor contaminated?	• Clean the sensor element using cotton swabs.	→ Replacing the transmission photosensor.
			(4) Is the transmission photosensor cable securely connected?	• Securely connect the cable for the transmission photosensor cable to Mainboard assembly connector J131.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

			(5) Make sure that the connections of the SLIDE motor assembly for the WIPER slide are good.	• Replace the SLIDE motor assembly for the wiper SLIDE.	→ Replacing the SLIDE motor assembly (wiper arm).
			(6) The Mainboard assembly may be damaged.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

9.3. TROUBLESHOOTING PROCEDURES WHEN ERRORS ARE NOT DISPLAYED

The following explains the messages, items to be confirmed and remedies to take when error messages are not displayed

9.3.1. Problems relating to initial operation

This chapter explains the messages displayed, the items to be confirmed and the remedy.

No.	Phenomenon	Check point	Action	Refer to
1	Power is not supplied.	(1) Check the panel unit assembly cables for open or shorted conditions.	• Replace the panel cables.	→ Removing the panel unit assembly.
		(2) Make sure that the connections of the power supply board and Mainboard assembly are good.	• Redo the connections of the following connectors. • Mainboard : J101 • power source board : CN2/CN4	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
		(3) Make sure that the connections of the inlet board assembly are good.	• Redo the connections of the following connectors. • Inlet board : CN1-CN3	→ Replacing the inlet assembly, inlet board assembly and lever foot SW cable assembly.
		(4) The panel board assembly may be damaged.	• Replace the panel board assembly.	→ Removing the panel unit assembly.
		(5) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
		(6) The power supply board assembly may have a problem.	• Replace the power supply board assembly.1	→ Replacing the power source board assembly.
2	LCD failure (no display / garbled display)	(1) Check if the DIMM (optional memory) is installed.	• The internal programs cannot be started without the DIMM installed in the product. Make sure to install the one in the specifications. If not installed, nothing will be displayed on the LCD and all LEDs will flash.	→ User's Guide

		(2) Make sure that the connections of the panel cable connectors at the panel side and the Mainboard assembly side is good. • Check the panel cables for skewed insertion. • Make sure that they are securely locked.	• Redo the connections of the following connectors. • Mainboard : J109 • Panel board : J301	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.→ Removing the panel unit assembly.
		(3) The DIMM (optional memory) may be damaged.	• Replace the DIMM (optional memory)	→ User's Guide
		(4) The panel cables may be damaged.	• Replace the panel cables.	→ Removing the panel unit assembly.
		(5) Check the panel unit assembly LCD for damages.	• Replace the panel board assembly.	→ Removing the panel unit assy.
		(6) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
3	Ink replenishment cannot be performed.	(1) Check if "Cover Open" is displayed on the LCD when the front cover is closed.	• Adjust the cover sensor.	→ Cover sensor adjustment.
		(2) Make sure that the connections of the panel cable connectors at the panel unit assembly side and the Mainboard assembly side is good. • Check the panel cables for skewed insertion. • Make sure that they are securely locked.	•Redo the connections of the following connectors. • Mainboard : J105 • Panel board : J301	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
		(3) Check if "LeverUp" is displayed on the LCD when the pressure arm is at the lower position.	• Replace the transmission photosensor at the lever.	→ Replacing the transmission photosensor.
		(4) The ink ID board assembly may be damaged.	• Replace the ink ID board assembly.	→ Replacing the I.H (ink holder) assembly

		(5) The JUNCTION board assembly may be damaged.	• Replace the JUNCTION board assembly.	→ Replacing the JUNCTION board assembly.
		(6) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
4	Although ink replenishment has started, the ink has not reached the head.	(1) The ink pump assembly may have a problem.	• Replace the ink pump assembly.	→ Replacing the pump assembly.
		(2) The maintenance parts may be damaged.	Replace the maintenance assembly.	→ Replacing the maintenance assembly.
		(3) The damper may be damaged.	• Replace the damper.	→ Replacing the H ink tube, tube branch and damper assembly.
		(4) The ink tube may be damaged.	• Replace the ink tube.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
		(5) The cartridge frame may be damaged.	• Replace the cartridge frame assembly.	→ Replacing the I/H (ink holder) assembly.
5	Ink is not supplied when ink replenishment is complete.	(1) Make sure that the connections of the head cable connectors at the CR board assembly side and the print head side is good. • Check the head cables for open conditions. • Make sure that they are securely connected.	• Redo the connections of the head cables to the connectors.	→ Replacing the CR board assembly.
		(2) Check the head cables for the open conditions.	• Replace the head cables.	→ Replacing the print head assembly and head tape power cable.
		(3) The print head may be damaged.	• Replace the print head assembly.	→ Replacing the print head assembly and head tape power cable.
		(4) Check the CR cables for open conditions.	• Replace the CR tape power cables.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.

		(5) The HEAD_DRV board assembly may have a problem.	• Replace the HEAD_DRV board assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
		(6) The Mainboard assembly may have a problem	• Replace the Mainboard .	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
6	Operation does not take place at all after the power is supplied.	(1) Check if “Cover Open” is displayed on the LCD when the front cover is closed. Check the proper operation of the cover sensory assembly via “TEST: Sensor” of the self-diagnostic function.	•Adjust the cover sensor. • Redo the connections of connectors J155 and J156 on the Mainboard assembly. • Replace he cover sensor assembly.	→ Cover sensor adjustment → Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.→ Replace the cover R sensor assembly and the cover L sensor assembly.
7	When power is supplied, “Initialize” is displayed, then reset.			
8	Initialization does not take place even if the paper is set.			
9	Operation does not take place even if the front cover is closed.			
10	Operation does not stop even if the front cover is opened.	(2) Panel unit Make sure that the connections of the panel cable connectors at the assembly side and the Mainboard assembly side are good. • Check the panel cables for skewed insertion. • Make sure that they are securely locked.	• Redo the connections of the following connectors. • Mainboard : J105 • Panel unit : J301	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
		(3) Check if “Set Paper” is displayed on the LCD when the pressure arm is at the lower position.	• Redo the connections of Mainboard assembly connectors J123 and J124. • Replace the transmission photosensor at the lever.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.→ Replacing the transmission photosensor.

		(4) Check if the detection function of the P_REAR sensor assembly is proper via “Test: Sensor” of the self-diagnostic function.	• Redo the connections of Mainboard assembly connectors J128 and J129. • Replace the P_REAR sensor assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.→ Replacing the P_REAR_R sensor and P_REAR_L sensor assembly
		(5) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
11	Key inputs via operation panel are disabled.	(1) Check the operation panel cover for breakage and contamination.	• Replace the operation panel cover.	-
		(2) Make sure that the connections of the panel cable connectors at the panel unit assembly side and the Mainboard assembly side is good. • Check the panel cables for skewed insertion. • Make sure that they are securely locked.	• Check the connections of the following connectors. • Mainboard : J105 • Panel board : J301	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.Þ
		(3) The panel unit assembly may be damaged.	• Replace the panel board assembly.	→ Removing the panel unit assembly.
		(4) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
12	Printing does not start even if data is received.	(1) Refer to “Problems relating to online and functions”.	-	→ Problems relating to online and functions.

9.3.2. Problems relating to paper feed

No.	Phenomenon	Check point	Action	Refer to
1	The paper comes off at paper set initialization or during the printing operation.	(1) Check if the P_REAR sensor assembly and P_EDGE sensor assembly are operating correctly via "Test: Sensor" of the self-diagnostic function	• Check if the connections of the following connectors. • Mainboard assembly : J128/J129, J137-J152 • CR board : J201-J261 • Adjust the sensitivity of the P_EDGE sensor • Replace the P_REAR sensor assembly and P_EDGE sensor assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly. → Replacing the CR board assembly → media sensor sensitivity adjustment → Replacing the P_REAR_R sensor and P_REAR_L sensor assembly→ Replacing the P_EDGE sensor assembly.
2	The paper is fed askew or meanderingly at paper set initialization or during the printing operation.	(2) Check the platen for contamination by paper dust and ink.	• If the platen is contaminated by ink or paper dust, wipe off with a damped soft cloth.	→ User's Guide
3	The paper is wrinkled at paper set initialization or during the printing operation.	(3) Check the rotation of pressure roller with the pressure arm at the raised position.	• If the surrounding area of the pressure roller is contaminated by paper dust and waste paper, wipe off with a damped soft cloth.	→ User's Guide
4	The paper jams up at paper set initialization or during the printing operation.	(4) Check paper guide F for significant deformation, flaws, foreign material, etc.	• If foreign materials such as wastepaper are found on the paper guide F, remove them. • Replace the paper guide F.	→ Removing media guide F.
5	After the paper set initialization, the paper size is detected incorrectly.	(5) Is the flange properly installed?	• Securely insert flanges into the paper tube for the roll paper.	→ User's Guide
		(6) Check the rollers of the paper receiver for flaws and wear that may hinder the rotation of the scroller.	• Replace the rollers of the scroller.	→ Replacing the scroller R assembly. → Replacing the scroller L assembly.
		(7) Check the scrollers for bends.	• Replace the scrollers.	→ User's Guide

9.3.3. Problems relating to the printing operation

No.	Phenomenon	Check point	Action	Refer to
1	Continuous printing cannot be performed.	(1) The program ROM may have failed.	• Upgrade the firmware version.	→ Firmware installation.
		(2) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
2	Give an extra feed after the printing operation has been completed.	(1) Check if the detection function of the P_REAR sensor assembly is correct via “Test: Sensor” of the self-diagnostic function.	• Make sure that the connections of Mainboard assembly connectors J128 – J129 are good. • Replace the P_REAR sensor assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly. → Replacing the P_REAR_R sensor assembly and P_REAR_L sensor assembly.
		(2) Check adjustments of the top & bottom and rear sensor positions.	• Adjust the positions of the top & bottom and rear sensors.	→ Top & bottom adjustment menu. → P_REAR sensor position adjustment menu.
		(3) The program ROM may have failed.	• Upgrade the firmware version.	→ Firmware installation
		(4) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
3	Dots are missed in printing	(1) Perform the printing operation via “Print: Nozzle Check” or “Test: Print” of the self-diagnostic function.	• When the nozzle check pattern is not printed correctly : go to step 2	→ Test printing menu
		(2) Repeat head cleaning several times.	• If the condition is not restored by performing the cleaning operation, leave the product for several hours then recheck it.	→ User’s Guide

4	Cleaning does not fix problems such as clogging or split nozzle.	(1) Check the use conditions of the product.	• Under low humidity conditions in particular, printing is performed poorly. Check the conditions under the guaranteed operation conditions.	→ Specifications
		(2) Check if the conditions occur after ink replenishment.	• Printing performance is not stable immediately after ink replenishment. Leave the product for several hours then recheck it.	-
		(3) Check the cleaning wipers for contamination.	• Using the provided cleaning cloth for cleaning the wipers, slightly dampen with cleaning liquid it and wipe the surface of the cleaning wipers, then recheck their condition by performing the cleaning operation. • If the ink is solid and does not come off by wiping, replace the wiper.	User's Guide → Replacing the cleaner
		(4) Check the installation conditions of the cleaning wipers.	• Check the installation conditions of the wipers and fix them securely.	→ Replacing the cleaner.
		(5) Check if the QR codes are input correctly.	• Input the correct QR codes.	→ Head rank input menu.
		(6) The damper may be damaged.	• Replace the damaged damper.	→ Replacing the H ink tube, tube branch and damper assembly.
		(7) The print head assembly may be damaged.	• Replace the damaged print head assembly.	→ Replacing the print head assembly and head tape power cable.
		(8) Check if the remaining amount of ink in the cartridge is sufficient.	• If "Near End" or "Ink End" is not displayed when the remaining amount of ink is insufficient, the ink sensor assembly may have a problem.	→ Replacing the I/H (ink holder) assembly.
		(9) The ink pump assembly may have a problem.	• Replace the ink pump assembly.	→ Replacing the pump assembly.

		(10) The maintenance assembly may have a problem.	• Replace the maintenance assembly.	→ Replacing the maintenance assembly
		(11) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the print head assembly and head tape power cable.
5	Nothing has been printed	(1) Check the head and CR cables for skewed insertion.	• Redo the connections of the following connectors. Connectors for the print head. • CR board : J201 – J232 • Mainboard : J137 – J152	→ Replacing the print head assembly and head tape power cable. → Replacing the CR board assembly. → Replacing the print head assembly and head tape power cable.
6	Only specific colours are not printed.	(2) The head and CR cables may be damaged.	• Replace the CR tape power cables.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
		(3) Check ink tubes for bends, flaws, air leaks, etc.	• Replace the damaged ink tubes.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
		(4) The print head assembly may be damaged.	• Replace the print head assembly.	→ Replacing the print head assembly and head tape power cable.
		(5) The damper may be damaged.	• Replace the damaged cable.	→ Replacing the H ink tube, tube branch and damper assembly.
		(6) The ink pump assembly may have a problem.	• Replace the ink pump assembly.	→ Replacing the pump assembly.
		(7) The maintenance assembly may have a problem.	• Replace the maintenance assembly.	→ Replacing the maintenance assembly.
		(8) The CR board assembly may have a problem.	• Replace the CR board assembly.	→ Replacing the CR board assembly
		(9) The HEAD_DRV board may be damaged.	• Replace the HEAD_DRV board.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.

		(10) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly.
7	Drawn black on a full screen (Or other specified colour)	(1) Check the head and CR cables for skewed insertion.	• Redo the connections of the following connectors. Connectors for the print head. • CR board : J201 – J232 • Mainboard : J137 - J152	→ Replacing the print head assembly and head tape power cable. → Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
		(2) The head and CR cables may be damaged.	• Replace the CR tape power cables.	→ Replacing the steel bearer, tube bearing, CR tape power cable and ink tube.
		(3) The print head assembly may be damaged.	• Replace the print head assembly.	→ Replacing the print head assembly and head tape power cable.
		(4) The CR board assembly may have a problem.	• Replace the CR board assembly.	→ Replacing the CR board assembly.
		(5) The HEAD_DRV assembly board may be damaged.	• Replace the HEAD_DRV assembly board	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
		(6) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
8	Light and slade printing occurs.	(1) Check if the use conditions are within the normal operation conditions.	• Be sure to use the product under the guaranteed operation conditions.	-

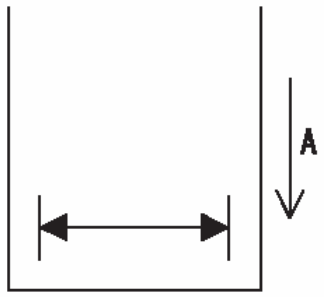
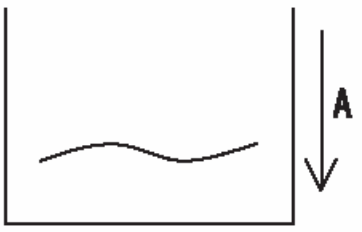
		(2) Check if printing began immediately after ink replenishment.	• The following phenomena may occur for the first printing that is processed immediately after ink replenishment. • Faint lines are drawn. • White streaks appear on the printing. • If these conditions are observed, perform cleaning a couple of times before printing, then check the result. • If cleaning does not improve the result, leave the products for at least several hours, redo the cleaning operation, then check the results again.	→ User's Guide
9	Irregularities occur in the image picture.	(3) Check the band feed adjustments.	• Adjust the band feed.	→ Band feed correction menu
10	The lines in the CR direction split.	(4) Check the head adjustments.	• Adjust the head.	→ Head precision adjustment
11	Black or white streaks occur in printings.	(5) Check if the suction fans are operating correctly via "Test: Fan" of the self-diagnostic function.	• Check the connections of the following connections. • Mainboard : J111-J116	→ Replacing the suction fan assembly.
		(6) If the paper in concern is roll paper, check if the scroller is rotating smoothly.	• Make sure the scroller receivers are installed in the correct position. • Replace the rollers of the scroller.	→ Replacing the scroller R assembly. → Replacing the scroller L assembly.
		(7) Make sure hat the PF belt tension is adjusted correctly.	• Adjust the tension of the PF reduction belt.	→ PF deceleration belt tension adjustment.
		(8) Check if the pump is running during the cleaning operation.	• Check that the connections of Mainboard connectors J160-J161 are good. • Replace the pump motor. • Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly → Replacing the pump motor assembly.
		(9) Check if he nozzle face is wiped correctly.	• Using the wiper, wipe the nozzle face well.	→ User's Guide

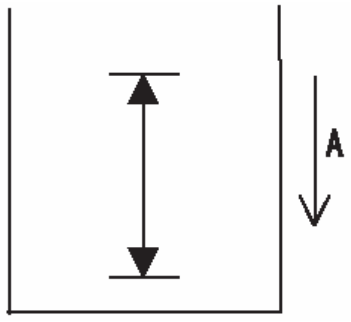
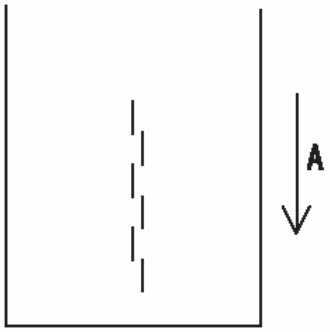
		(10) Check the cleaning wipers for contamination.	• Using the provided cleaning cloth for cleaning the wipers, slightly dampen it with cleaning liquid and wipe the surface of the cleaning wipers, then recheck their condition by performing the cleaning operation. • If the ink is solid and does not come off by wiping, replace the wiper.	→ User's Guide → Replacing the cleaner
		(11) Check the T fence for contamination	• Clean the T fence. • If contamination cannot be cleaned up, replace the T fence	→ Replacing the fence
		(12) Check the rotation of the pressure roller with the pressure arm at the raised position.	• If the surrounding area of the pressure roller is contaminated by paper dust and waste paper, wipe it with a soft dampened cloth.	→ User's Guide
		(13) Check if the QR code is input correctly.	• Input the correct QR codes.	→ Head rank input menu
		(14) The head assembly may be damaged.	• Replace the damaged head assembly.	→ Replacing the print head assembly and head tape power cable.
		(15) The ink tube may be damaged.	• Replace the ink tube.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
		(16) The CR board assembly may have a problem.	• Replace the CR board assembly.	→ Replacing the print head assembly and head tape power cable.
		(17) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
12	The printing boundary is smeared.	(1) Check if the condition is recovered by cleaning.	• If the condition is not recovered by performing the cleaning operation a couple of times, leave the product for a while then recheck it.	→ User's Guide

		(2) Check if the set paper is one of those recommended by MUTOH.	• Reset the recommended paper and recheck the condition. If paper not recommended by MUTOH is used, the paper may not be recognized correctly by the paper sensor. • Check the condition using the printing mode that is recommended for the paper.	→ User's Guide
		(3) Check the head adjustments.	• Adjust the head.	→ Head precision adjustment
		(4) Check if the QR code is input correctly.	• Input the correct QR codes.	→ Head rank input menu
		(5) The CR cables may be damaged.	• Replace the CR tape power cables.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
		(6) Check the head assembly for breakage.	• Replace the damaged head assembly	→ Replacing the print head assembly and head tape power cable.
		(7) The CR board assembly may have a problem.	• Replace the CR board assembly.	→ Replacing the CR board assembly
		(8) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
13	There are many satellite droplets (unnecessary dots)	(1) Check if the use conditions are within the normal operation conditions.	• Be sure to use the product under the guaranteed operation conditions.	

14	Fiber tracking is shown in prints.	(2) Check if printing began immediately after ink replenishment.	• The following phenomena may occur for the first printing processed immediately after ink replenishment. • Faint lines are drawn. • White streaks appear on the printing. • If these conditions are observed, perform cleaning a couple of times before printing, then check the results. • If cleaning does not improve the results, leave the products for at least several hours, redo the cleaning operation, then check the results again.	→ User's Guide
15	Lines look blurred when printed.	(3) Check if the tension of the steel belt is properly adjusted.	• Adjust the steel belt tension.	→ Steel belt tension adjustment
		(4) Check the head adjustments.	• Adjust the head.	→ Head precision adjustment
		(5) Check the T fence for contamination.	• Clean the T fence • If contaminants cannot be cleaned up by cleaning, replace the T fence.	→ Replacing the T fence
		(6) Make sure that the CR_ENC assembly and the T fence are not interfering.	• If they interfere with each other, adjust the installation positions of the CR_ENC assembly and the T fence. • If the adjustments do not improve this, replace the CR_ENC assembly and the T fence.	→ Replacing the T fence. → Replacing the CR_ENC assembly
		(7) Check if the pump is running during the cleaning operation.	• Check that connections of Mainboard connectors J160-J161 are good. • Replace the pump motor assembly. • Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly → Replacing the pump motor assembly.

		(8) Check if the nozzle face is wiped correctly.	• Using the wiper, wipe the nozzle face well.	→ User's Guide
		(9) Check the cleaning wipers for contamination.	• Using the provided cleaning cloth for cleaning the wipers, slightly dampen it with cleaning liquid and wipe the surfaces of the cleaning wipers, then recheck their conditions by performing the cleaning operation. • If the ink is solid and does not come off by wiping, replace the wiper.	→ User's Guide. → Replacing the cleaner
		(10) Check if the QR code is input correctly.	• Input the correct QR codes.	→ Head rank input menu
		(11) The head assembly may be damaged.	• Replace the damaged head assembly	→ Replacing the print head assembly and head tape power cable.
		(12) The ink tube may be damaged.	• Replace the ink tube.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
		(13) The CR board may have a problem.	• Replace the CR board assembly.	→ Replacing the CR board assembly.
		(14) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
16	Mixed colour lines do not overlap.	(1) Check if the tension of the steel belt is properly adjusted.	• Adjust the steel belt tension.	→ Steel belt tension adjustment
17	The positions of black and colours are not aligned.	(2) Check the head inclination and height adjustments.	• Adjust the inclination and height of the head.	→ Head precision adjustment
		(3) Check the two-way printing position alignment for problems.	• Adjust the two-way printing position alignment.	→ Repeatability alignment menu
		(4) Check if CW adjustments are made correctly.	• Perform the CW adjustments.	→ CW adjustment menu
		(5) Check if the QR code is input correctly.	• Input the correct QR codes.	→ Head rank input menu

		(6) Make sure that the CR_ENC assembly and the T fence are not interfering.	• If they are interfering with each other, adjust the installation positions of the CR_ENC assembly and the T fence. • If the adjustments do not improve this, replace the CR_ENC assembly and the T fence.	→ Replacing the T fence. → Replacing the CR_ENC assembly.
		(7) The head assembly may be damaged.	• Replace the damaged head assembly.	→ Replacing the print head assembly and head tape power cable.
18	A limited line in the head travel direction is not accurate (in the main scanning direction)  A: Paper discharging direction	(1) Check if the use conditions are within the normal operation conditions.	• be sure to use the product under the operation conditions.	-
		(2) Check if the tension of the steel belt is adjusted correctly.	• Adjust the steel belt tension.	→ Steel belt tension adjustment
		(3) Check the T fence for contamination.	• Clean the T fence • If the contaminants cannot be cleaned up, replace the T fence.	→ Replacing the T fence.
		(4) The internal process operation of the Mainboard assembly may be malfunctioning.	• Check the operation again after initializing parameters and re-inputting and re-adjusting them.	→ Parameter initialization menu.
19	Straight lines in the head travel direction are not accurate (straightness)  A: Paper discharging direction	(1) Make sure that the PF reduction belt tension is adjusted correctly.	• Adjust the tension of the PF reduction belt.	→ PF deceleration belt tension adjustment.
		(2) Check the rotation of the pressure roller with the pressure arm at the raised position.	• If the surrounding area of the pressure arm is contaminated by paper, wipe it with a soft dampened cloth.	→ User's Guide
		(3) Check if rattles are heard when the carriage is moved from side to side.	•Clean the dust from the carriage bearings and roller guide. When the roller guide is cleaned, apply a light coat of grease on the roller guide using a cloth soaked in grease spray. • Replace the CR cursor assembly	→ Replacing the CR cursor assembly.

20	A limited line in the paper feed direction is not accurate (in the sub scanning direction)  A : Paper discharging direction	(1) Check if the use conditions are within the normal operation conditions.	• Be sure to use the product under the operation conditions.	-
		(2) Check if distance is compensated for the paper in use.	• Compensate the distance.	→ Band feed correction menu
		(3) Check the PF drive pulley for looseness.	• Replace the PF motor assembly.	→ Replacing the PF motor assembly.
		(4) Make sure that the PF reduction belt tension is adjusted correctly.	• Adjust the tension of the PF reduction belt.	→ PF deceleration belt tension adjustment
		(5) Check the rotation of the pressure roller with the pressure arm at the raised position.	• If the surrounding area of the pressure roller is contaminated by paper dust and waste paper, wipe it with a soft dampened cloth.	→ User's Guide
		(6) Check the grid roller for rugged movement. Also, check the rotary movement for irregularities.	• If foreign material such as paper dust and wastepaper are found on the grid rollers, remove them using a nylon brush.	→ User's Guide
		(7) If the paper in concern is roll paper, check if the scroller is rotating smoothly.	• Make sure that the scroller receiver is installed correctly. • Replace the rollers of the scroller.	→ Replacing the scroller R assembly. → Replacing the scroller L assembly.
21	Straightness in the paper feed direction is not accurate (paper joint accuracy).  A : Paper discharging direction	(1) Check if the actually installed head rank and the registered head rank match.	• Input the correct head rank.	→ Head rank input menu.
		(2) Adjust the inclination of the head.	• Adjust the inclination of the head.	→ Head precision adjustment.
		(3) Check if the tension of the steel belt is adjusted correctly.	• Adjust the steel belt tension.	→ Steel belt tension adjustment.
		(4) Check the two-way printing position alignment for problems.	• Adjust the two-way printing position alignment.	→ Repeatability alignment menu
		(5) Check if the CW adjustments are made correctly.	• Perform the CW adjustments.	→ CW adjustments menu
		(6) Check the T fence for contamination.	• Clean the T fence • If contaminants cannot be cleaned up, replace the T fence.	→ Replacing the T fence
		(7) Check the CR cursor assembly for play.	• Replace the CR cursor assembly.	→ Replacing the CR cursor assembly.

22	Inaccurate squareness	(1) Check the installation method of the paper.	Setup the paper according to the User's Guide.	→ User's Guide
		(2) Check the rotation of the pressure roller with the pressure arm at the raised position.	• If the surrounding area of the pressure roller is contaminated by paper dust and waste paper, wipe it with a soft dampened cloth.	→ User's Guide
		(3) Check the grid roller for rugged movement. Also, check the rotary movement for irregularities.	• If the surrounding area of the pressure roller is contaminated by paper dust and waste paper, wipe it with a soft dampened cloth.	→ User's Guide
23	Abnormal discharge occurs.	(1) Check if the two head tape power cables stick together.	• The cores of the head tape power cables should be aligned for each head and taped together with double-sided tape.	→ Replacing the print head assembly and head tape power cable.
		(2) Make sure that the CR tape power cables are bundled correctly.	• Bundle the CR tape power cables so that they do not move.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.

9.3.4. Problems relating to noise

No.	Phenomenon	Check point	Action	Refer to
1	There is noise when the paper is loaded.	(1) Check the surroundings of the suction fan assembly for obstructions and foreign objects.	• Remove obstructions and foreign material.	→ Replacing the suction fan assembly.
		(2) Check the cables for damage and make sure that the connector connections are good.	• If damage is found, replace the appropriate parts.	-
		(3) The suction fan assembly may have failed.	• Replace the suction fan assembly.	→ Replacing the suction fan assembly.
		(4) The Mainboard assembly may have failed.	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
		(5) The power supply board assembly may have a problem.	• Replace the power supply board assembly.	→ Replacing the power source board assembly.
2	You hear some noise during printing wait.	(1) Check the area where there is noise from for obstruction and foreign materials.	• Remove the obstructions and foreign materials.	-
3	You hear some noise when the head is moving from side to side.	(1) Check if the high pitch sound emitted while ink is discharging during printing, is not confused with the noise.	• Follow the descriptions in the specifications.	-
		(2) Check the screws on the cover for looseness that causes noise.	• Re-tighten the screws.	→ Removing the cover.
		(3) Check if rattles are heard when the carriage is moving from side to side.	• Clean the dust from the carriage bearings and roller guide. When the roller guide has been cleaned, apply a light coat of grease on the roller guide using a cloth soaked in grease spray. • Replace the CR cursor assembly.	→ Replacing the CR cursor assembly

		(4) Check the CR cables for noise.	• Correct the cable's tendency and fix the condition. • If noise is heard from between the steel bearing and tube guide, replace the tube guide.	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube.
		(5) Make sure that the CR_ENC assembly and the T fence are not interfering.	• If interference is observed, adjust the installation positions of the appropriate components. • If the adjustment does not improve this, replace the appropriate components.	→ Replacing the T fence → Replacing the CR_ENC assembly
		(6) Check the bearings of the CR driven pulley for noise.	• Replace the CR driven pulley assembly.	→ Replacing the CR slave pulley assembly.
		(7) Check if the tension of the steel belt has been properly adjusted.	• Adjust the steel belt tension.	→ Steel belt tension adjustment.
		(8) Check the CR motor assembly for noise.	• Replace the CR motor assembly.	→ Replacing the CR motor assembly.
		(9) Check the cursor roller of the CR cursor assembly for noise.	• Replace the cursor roller.	→ Replacing the cursor roller assembly.
4	You hear some noise when the paper is fed.	(1) Check the PF reduction belt for the skipping of teeth between the belt and PF reduction pulley.	• Replace the PF reduction belt.	→ Replacing the PF motor assembly
		(2) Check the PF motor assembly for noise	• Replace the PF motor assembly.	→ Replacing the PF motor assembly
		(3) Check the grid roller for rugged movement. Also, check the rotary movement for irregularities.	• If foreign materials such as paper dust and waste paper are found on the grid rollers, remove it using a nylon brush.	→ User's Guide.

9.3.5. Problems relating to the paper cutting operation

No.	Phenomenon	Check point	Action	Refer to
1	The cutting operation is not performing correctly.	(1) Check the operation panel and make sure that the media cutting setting is not set to off or manual.	• Change the setting.	→ User's Guide
		(2) Check the operation panel and make sure that PaperDet. has not been set to TakeUpRoll.	• Change the setting.	→ User's Guide
		(3) Check the cutter grooves for accumulated paper dust and clips.	• Remove the accumulated paper dust along the direction of the grooves.	→ User's Guide
		(4) Is the cutter cap securely installed?	• Reset the cutter cap securely.	→ User's Guide
		(5) Check the cutter's up and down sliding operation.	• If it does not rise : go to step 4 • if it rises : go to step 5	-
		(6) Check if the cutter drops to the bottom end under its own weight when the cutter is installed without the cutter spring.	• If it drops : The cutter spring may have a problem. Replace the cutter spring while referring to the unfolded view. • If it does not drop : The cutter may have a problem. Replace the cutter. If the cutter does not drop after it is replaced, replace the cutter holder.	→ Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly and solenoid spring.
		(7) Check the up and down operation of the solenoid via "Life/Cutter" of the self-diagnostic function. a) The solenoid moves up and down: check the cutter's down position relative to the cutter groove.	OK : The cutter's service life has exceeded or the cutter is damaged. Replace the cutter. NG : Adjust the position of the cutter holder.	→ User's Guide → Cutter adjustment

		b) It does not move up or down.	• The connectors may have poor contacts. Check the connections of the following connectors. • CR board : J235 • CR board : J201-J216 • Mainboard : J137-J152	→ Replacing the CR board assembly → Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
		(8) Open CR cable, faulty solenoid assembly, faulty board assembly, etc. may be the causes.	• Replace the CR tape power cables. • Replace the solenoid assembly • Replace the CR board assembly • Replace the Mainboard assembly	→ Replacing the steel bearer, tube guide, CR tape power cable and ink tube. → Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly and solenoid spring. → Replacing the CR board assembly → Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
2	Cutting has been performed during printing.	(1) Check if the paper (output) size on the application side is correct.	• Correct the paper (output) size on the application side.	-
		(2) The program ROM may have failed.	• Upgrade the firmware version.	→ Firmware installation
		(3) Check the CR cables for skewed insertion.	• Check the connections of the following connectors. • CR board : J235 • CR board : J201-J216 • Mainboard : J137 – J152	→ Replacing the CR board assembly
		(4) The CR board may have a problem.	• Replace the CR board.	→ Replacing the CR board assembly
		(5) The Mainboard may have a problem.	• Replace the Mainboard .	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly

3	The cutting operation is in process, but the paper has not been cut.	(1) Check the cutter blade for shipping and deterioration.	• Replace the cutter.	→ User's Guide
4	The paper has not been cut as smoothly as expected, resulting in jamming.	(2) Check if the cutter cap is securely installed.	• Reset the cutter cap securely.	→ User's Guide
		(3) Check if the cutter moves up and down smoothly.	• Reinstall the cutter spring.	-
		(4) Check the cutter grooves for accumulated paper dust and slips.	• Remove the accumulated paper dust along the direction of the grooves.	→ User's Guide
		(5) Check if the cutter blade is parallel with the groove.	• Make adjustments.	→ Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly and solenoid spring.
5	The cutting operation is in process but the paper does not fall off.	(1) The sub-platen (cutter groove) requires daily maintenance.	• Clean the surface of the sub-platen	
		(2) The sub-platen, paper guide or the paper may be charged with static electricity.	• Provide a proper ground. • Check and adjust the ambient humidity so that it meets the normal operation conditions of the product and paper.	-
6	Inaccurate paper cutting	(1) Check the cutter blade for chipping and deterioration.	• Replace the cutter.	→ User's Guide
		(2) Has the cutter cap been securely installed?	• Reset the cutter cap securely.	→ User's Guide
		(3) Check if the cutter moves up and down smoothly.	• Reinstall the cutter spring.	-
		(4) Check the cutter grooves for accumulated paper dust and slips.	• Remove the accumulated paper dust along the direction of the grooves.	→ User's Guide
		(5) Check if the cutter blade is parallel with the groove.	• Make adjustments.	→ Replacing the cutter holder, cutter spring, cutter cap, solenoid assembly and solenoid spring.
		(6) The cutter may have a problem.	• Replace the cutter.	→ User's Guide
7	Cutting starts after the completion of the print.	(1) Check the operation panel and make sure the InkDryTime has not been set.	• Change the settings.	→ User's Guide
		(2) Check the LCD and see if messages for an analysis have been displayed.	• Printing data remains.	→ User's Guide

9.3.6. Problems relating to online and functions

No.	Phenomenon	Check point	Action	Refer to
1	Online has not been properly established by Centronics.	(1) Check the Centronics settings in the operation panel.	• Change the setting.	→ User's Guide
		(2) Replace the interface cables and see if errors still occur.	• Trouble such as an open interface cable or cables that are too long may cause communication failure. An instruction must be given so that only cables compliant with the standard are used.	-
		(3) The program ROM may have failed.	• Upgrade the firmware version.	→ Firmware installation
		(4) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
2	Online has not been properly established by the network.	(1) Check if the cables in use for connections are correct.	• Use 100BASE-T cross cables for direct connections to the host. • Use 100BASE-T straight cables for connections using HUBs.	-
		(2) Check the network settings in the operation panel for problems.	• Reset the settings upon confirmation by an network administrator.	→ User's Guide
3	Scaling is not functioning correctly.	(1) The program ROM may have failed.	• Upgrade the firmware version	→ Firmware installation
4 5	Mirroring is not functioning correctly. Other functions are not performing correctly.	(2) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
6	The printing position has been misaligned.	(1) Check if CW adjustments are made correctly.	• Make adjustments.	→ CW adjustment menu
		(2) Check the top & bottom adjustments	• Make adjustments.	→ Top & Bottom adjustment menu
		(3) The program ROM may have failed.	• Upgrade the firmware version	→ Firmware installation
		(4) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_ DRV board assembly and cooling fan assembly

7 8	A portion of the data has not been drawn (is missing). Garbled characters or printings are produced.	(1) The program ROM may have failed.	• Upgrade the firmware version.	→ Firmware installation
		(2) Check the T fence for contamination and bends.	• If contaminated with grease and dusts, wipe with a dry cloth. • If contaminated with ink, wipe with a lightly dampened cloth and then with a dry cloth. •If contamination is severe, replace the T fence.	→ Replacing the T fence
		(3) Check the "Encoder:PF" via "Test: Encoder" of the self-diagnostic function	• Make sure that the connections of Mainboard assembly connector J132 are good. • Replace the T fence. • Replace the CR_ENC assembly. • Replace the CR motor. • Replace the CR_BASE board assembly. • Replace the CR tape power cables.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly→ Replacing the T fence. → Replacing the CR motor assembly → Replacing the CR board assembly. → Replacing (storing) the steel bearing, tube guide, CR tape power cable and ink tube.
		(4) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
9	After printing has been completed, the paper is fed an extra amount.	(1) The program ROM may have failed.	• Upgrade he firmware version.	→ Firmware installation
		(2) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly

9.3.7. Other problems

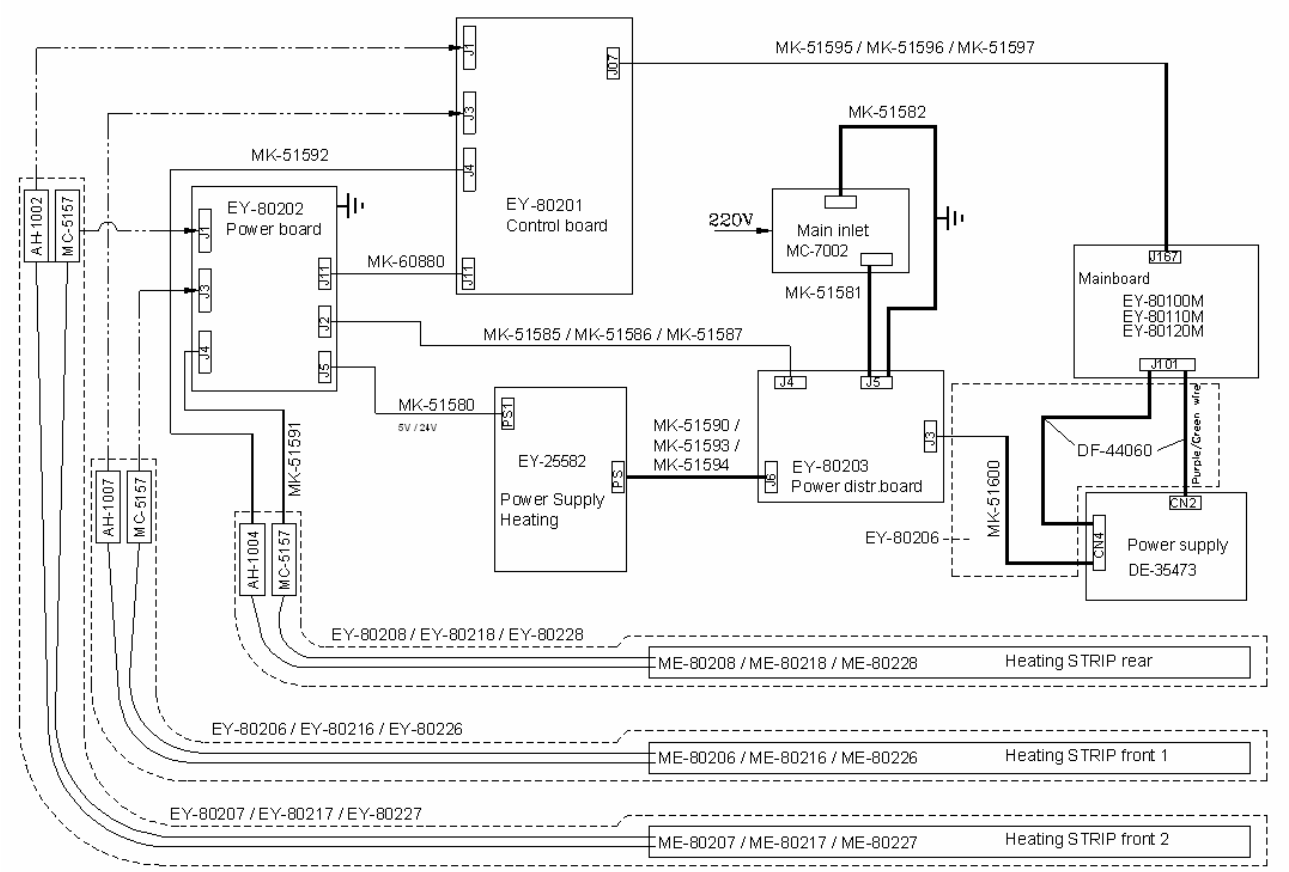
No.	Phenomenon	Check point	Action	Refer to
1	A hang up occurs	(1) The internal process operation of the Mainboard assembly may be malfunctioning.	• Check the operation again after initializing parameters and re-inputting and re-adjusting them.	→ Parameter backup
		(2) The Mainboard assembly may have a problem.	• Replace the Mainboard assembly.	→ Replacing the Mainboard assembly, HDD_Extension board assembly, HEAD_DRV board assembly and cooling fan assembly
2	The power has been cut off during the printing operation.	(1) Make sure that the power cables are not disconnected.	• Securely connect the power cables.	-
		(2) Check the power cables for a shorted condition.	• Check the condition using a tester.	-
		(3) Check for leakage.	• Check the cables for peeled off insulation and contact with the case.	-

10. APPENDIX

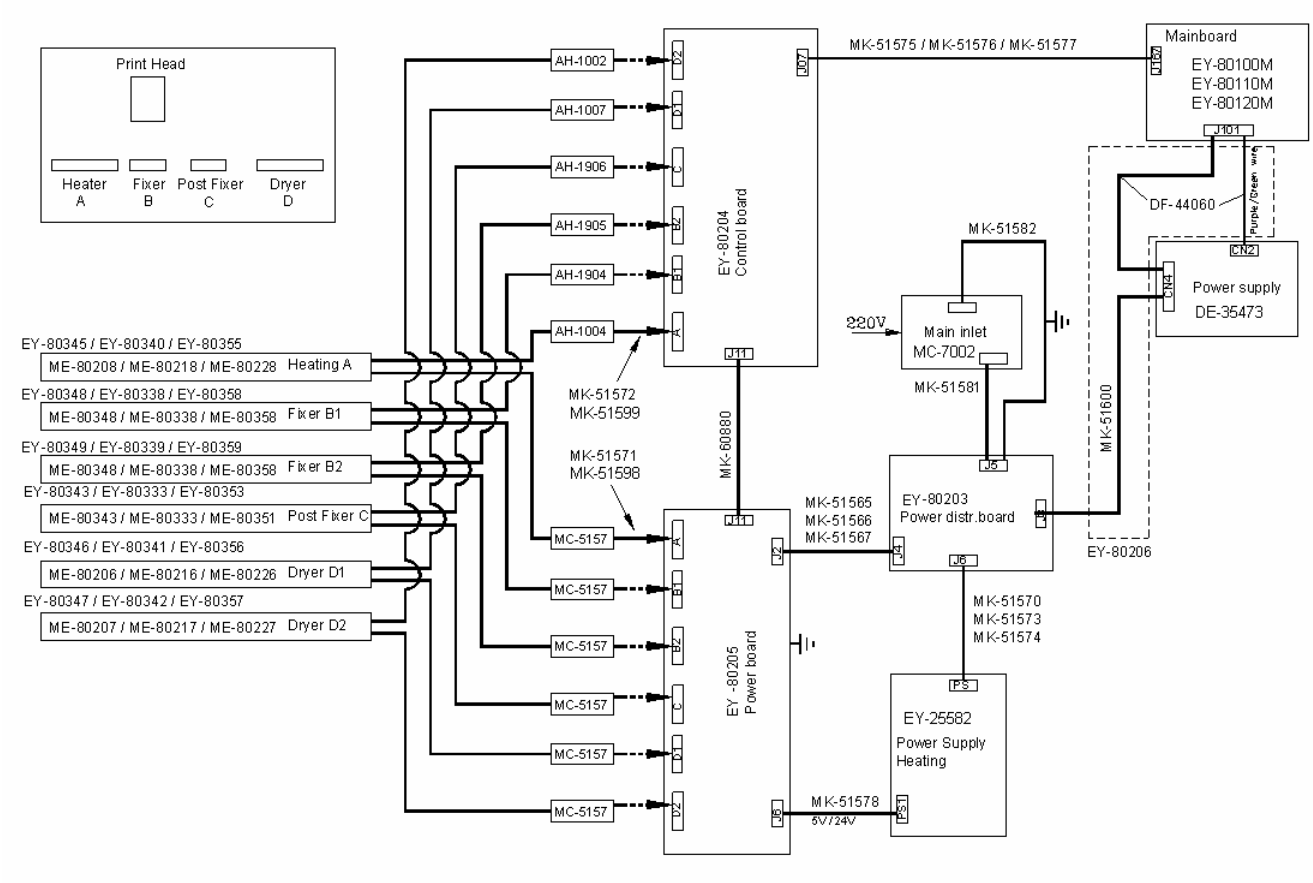
10.1. INTRODUCTION

This chapter provides referential information such as service data and exploded views.

10.2. WIRING DIAGRAM ROCKHOPPER II 2H



10.3. WIRING DIAGRAM ROCKHOPPER II 4H



10.4. ROCKHOPPER II : SERVICE PARTS LIST/EXPLODED VIEWS/CONFIGURATION DIAGRAMS

This section includes the service parts list, exploded views of respective units and configuration diagrams.

Notes :

- For the latest 'exploded views' and 'part description', please refer to the spare part lists of the printer.
- The latest exploded views are available separately from the manual.
- For spare parts, please refer to the latest spare part list.
- Specifications are liable to changes without prior notice.

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